



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 01

Date Authorised for Publication: 7 February 2019

Finlay, Hamish

From: Virginia Buonopane [REDACTED]
Sent: Wednesday, 28 November 2018 5:54 PM
To: LA Committee - EDT
Subject: NO to Drone Delivery Systems in Canberra

Dear LA Committee EDT

I wish to submit my objective to Drone Delivery Systems in Canberra due to the following reasons:

- Impact this will have on native wildlife, especially bird life
- Domestic animals, especially the increase dog barking, which will create other issues to the community
- The impact this will have on greenhouse gas emissions, and
- Privacy issues.

Kind Regards
Virginia Buonopane
[REDACTED]



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Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 02

Date Authorised for Publication: 7 February 2019


30 November 2018

Mr Jeremy Hanson
Chair
Standing Committee on Economic Dev't and Tourism
ACT Legislative Assembly

Dear Mr Hanson

Submission to the Inquiry into drone delivery in the ACT

Drone delivery in the suburbs of Canberra is unnecessary and will severely compromise the rights of residents to quiet enjoyment of their homes and gardens.

I understand that drones can be helpful, even necessary, in remote parts of Australia but residents of the ACT are not isolated. The convenience of having food/coffees delivered by drone is an extremely flimsy reason to removed peoples' amenity. Drone delivery of items such as medicine, while arguably slightly more worthy of consideration, is not vital and in my view certainly doesn't outweigh the damage it would cause. It should come down to whether there is genuine isolation - and the ACT just doesn't 'cut it'.

Drones are highly intrusive. Their noise is extremely aggravating and will cause serious distress to residents (for no good reason). Drone deliveries would undermine any claim to be the 'bush Capital'.

I experienced the invasiveness and frustration of drones on a recent holiday and believe that no-one can fully appreciate their obnoxiousness unless they have experienced them. Consequently, I urge the Committee to

- (i) arrange for drones to fly over the homes and gardens **of each Committee member** on a quiet day and
- (ii) get noise data from the relevant authority/experts, including advice on just how aggravating this particular type of noise is.

I predict that if drone deliveries are approved for the ACT it will cause extreme angst and loss of enjoyment of their own home for many people, traded off for a small (and non vital) 'benefit' to a few residents.

This is a case if ever there was one where the following saying applies: just because you can, doesn't mean you should.

Yours sincerely

Margaret Ryan



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Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 03

Date Authorised for Publication: 7 February 2019

From: brett.goyne
To: [LA Committee - EDT](#)
Cc: [REDACTED]
Subject: Personal submission B Goyne - Drone trial ACT
Date: Thursday, 6 December 2018 11:37:55 AM

I am responding to the Committee on the environmental aspects and impacts upon social amenity of drone use in residential areas.

From the City News of November 29, 2018, I understand that drone deliveries from Mitchell to surrounding suburbs are proposed.

If drone deliveries commence, the drones must not be allowed to overfly suburban houses or blocks. I value highly the amenity of privacy and drones must be required to follow existing road corridors, and only overfly agreed public spaces, this is essential. Drones flying over residential blocks contain cameras and present a great risk to privacy and to the 'quiet enjoyment' of our homes and gardens. If drones were allowed to overfly private homes and gardens the potential for nuisance barking by dogs is also greatly increased.

The potential impact on bird life should be assessed and monitored, to prevent driving off birds or affecting their nesting, breeding, or feeding habits.

All drones should required to carry an identifying signal and also a visual number plate so that they can be tracked and they must be required to log all flights to enable monitoring and regulation. It should be feasible to identify them visually by a number plate and for their identifier signal to be read by, for example, a phone app, so that a householder can identify off-course or intrusive drones. Drone IDs should be available on a public website which clearly identifies each drone, their owner and operator and their contact details.

Drones should not be allowed to broadcast advertising material by projection or loudspeaker.

I am willing to be contacted by the committee if that would help and I would appreciate being notified of any further opportunities for public comment or consultation.

Thank you, Brett

Brett Goyne
[REDACTED]

Sent from Samsung tablet.



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Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 04

Date Authorised for Publication: 7 February 2019

From: [Irene Upton](#)
To: [LA Committee - EDT](#)
Subject: Wings Drone Delivery
Date: Thursday, 6 December 2018 10:31:01 PM

Dear All

I have been

following with interest the positive and negative aspects of having services delivered by drones to my area. I'm sure you will be aware of the trial being done in Bonython ACT.

My family and I are part of the trial by Wings Delivery for goods and services that we have been privileged to partake in.

I have also observed with interest the group called BAD (Bonython Against Drones) who have been very over zealous in their negative activities to stop the Wing services.

There are many reasons as to why these services should continue. It is not all about the coffees that are delivered, although these are an absolute bonus from Kickstart Express. Who would not love a coffee every morning with a healthy yoghurt or toastie within 10 minutes delivered to your own backyard. No waiting in cues, no petrol, no impact on the environment Please bear with me as I mention a few other ways the Wings Delivery have assisted my family.

The reduction to green house gases emissions and reduction in the use of fossil fuel must be high on the list of bonuses.

Helping in the future environment warms my heart as I have grandchildren who need our help to keep our air clean now.

My family and I have used all the services offered such as gaffer tape and light bulbs from Bunnings.

. Sunscreen and cold and flu medication from Chemist Warehouse.

. Toasties and muffins , healthy yoghurt from Kickstart.

. Beautiful rich chocolate is one of my daughters favourite.

Also of course Mexican food from Guzman and Gomez is a personal favorite of my husband.

The noise factor that the BAD group go on about has been taken on board by the Wings services and the noise appears to have been made more low pitched. The noise is actually less than 20 seconds if you have a delivery and if the drone is going to another neighbor it's less than 12 seconds. The noise from the construction sites of Tuggeranong are far more disturbing .

BAD go on about it upsetting the bird life. Not in my backyard. I have 2 magpie families, galahs, cockatoos, a blue wren and his ladies. As well as many kurrawongs they do not worry about our drones. The neighbors have dogs and they have never barked at the drones.

The benefits of this far out weighs the negative feed back from the small minded group BAD

Please consider this in your future direction for Wing drones Delivery

Sincerely

Irene Clarke





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Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 05

Date Authorised for Publication: 7 February 2019

Personal submission to the Inquiry into drone delivery systems in the ACT – Karen Neill

Introduction

My submission seeks to make two major points about the use of drones to deliver food and small goods to residential areas of Canberra. The two major points I wish to make are that the use of drones has the potential to disturb both native and domesticated animals. In addition, drone delivery appears to involve increased packaging to preserve the integrity of the product. This seems contradictory to the increased emphasis on reducing waste.

I acknowledge that there may be a cohort who might feel they could benefit from the addition of drone delivery to the other ways of obtaining goods and services. However, I have not seen a compelling business case has been presented to date to allow increased noise and aerial activity in Canberra suburbs. It appears that novelty is the main reason for allowing drone deliveries and the examples given of the benefits of the service have relied on food or beverage deliveries, which appear to be well serviced by bicycle and car delivery services. I note a “special investigation” by the Canberra Times (10 DECEMBER 2018) notes a coffee was delivered without spilling the coffee

(<https://www.canberratimes.com.au/national/act/drone-coffee-does-it-spill-is-it-hot-a-special-investigation-20181204-p50k1b.html>).

I also have concerns about the noise affecting people with disabilities or mental health concerns, who may be seen as users of this form of delivery. I would urge the Assembly to seek expert advice on the effects of noise pollution, particularly the frequencies of drones, on people who are housebound with physical or mental health issues. Another issue I see arising in the future are neighbour disputes over the use of these services, particularly during evenings and overnight. Given the delivery of one meal could involve several drone deliveries (see CT article) there will need to be some guidance for customers on what will be reasonable use of these types of services. I expect that the Assembly will seek expert advice on neighbourhood disputes over noise to inform their deliberations.

I expect that entrepreneurial dealers in illicit substances have been early adaptors of this technology. This may make enforcement of existing laws regarding banned substances more difficult to investigate when neighbours become inured to the noise of drones in their street.

The effect of noise on wildlife

I do not have expertise in this subject, but have noticed reports on social media concerning the effect of drone noise on wildlife. This story from June 2017 examined the issue:

<https://www.theverge.com/2018/11/5/18066082/baby-bear-mountain-climb-russia-drone-pilot-endangered>

A quick search found this article in “*Unmanned aircraft systems as a new source of disturbance for wildlife: A systematic review*”

(<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0178448>)

“(Conclusions and management implications)... *studies conducted on RC fields indicate that abundant flights may lead to territory abandonment and decreased productivity in sensitive bird species [56,66-68]...*”

National Geographic posited in 2015 that, in some cases, the use of drones might be worthwhile, even where it does cause distress.

(<https://news.nationalgeographic.com/2015/08/150825-drones-animals-wildlife-bears-science-technology/>). However, this is in the case of wildlife management, not the delivery of hot coffee.

Can we be sure that drones will not cause, for example, kangaroos to bolt into suburbs and potentially onto roads? Can we be confident that flying possums and birds won't be disrupted in their breeding cycles by drone noise and presence? I note that there have been no bird strikes in trials to date, which is promising. But physical contact is only one aspect of the effect of drone noise and presence for wildlife.

As a former dog and cat owner, I have concerns about how some pets will also adjust to the noise and presence of drones. My aunt had a dog that would howl and get distressed at the approach of airplanes. This happened a long time before the plane noise became evident to

the humans in the room, demonstrating how dogs have more acute hearing. My cats also displayed acute hearing, getting distressed at high pitched sounds, like neighbourhood lawn mowers.

I expect the committee will seek independent advice on this matter, and I thank the Assembly for its diligence in reviewing this matter.

Increased packaging

In the previously quoted Canberra Times article, it was noted that the coffee was delivered in takeaway cups, in a cardboard holder, within a cardboard box, which has a plastic handle. It may be that cardboard will give way to plastic in colder and wetter weather.



The article also states that, because of load limits, a meal for several people would mean several drones would be required. This would require multiple boxes and handles. At a time when the community is being urged to reduce unnecessary packaging, this seems retrograde.

Conclusion

Thank you for the opportunity to comment on this trial. I hope my comments raise matters that the Assembly committee members consider worthy of further consideration and advice, and that, if the trial expands, that the Assembly provides guidance for the mitigation of adverse impacts.

I look forward to reading the final report.

Karen Neill



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Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 06

Date Authorised for Publication: 7 February 2019

ACT Legislative Assembly

Standing Committee on Economic Development and Tourism

Submission to the Inquiry into Drone Delivery Systems in the ACT

Terms of Reference 1 (b) *the economic impact of drone delivery technology being tested in the ACT*

Calculation of the economic benefit that addresses only the number of jobs created by the company providing the drone service, or the value of deliveries that it makes is misleading as a guide to the economic impact of the introduction of a drone service. Any calculation of economic benefits needs to be done on a net basis: that is the calculation also takes account of the jobs that are lost and turnover shifted from other businesses as a result of the introduction of the service.

The basic principle is that the total disposable income spent on the service and the good delivered in the region covered by the drone service will not increase as a result of the introduction of the service. Income spent on the drone service and the services is income that will then not be available to be spent on other services. The calculation of net economic benefit would have to include the following elements:

Economic impact - benefits:

Drone service company:

- Capital investment
- Annual Turnover
- Annual Profit/loss
- Jobs created

Businesses using drones for delivery

- Net increase in income as a result of using the drone services
- Net jobs created as a result of using the service

Negative Economic impact

Delivery agencies

- Capital investment not undertaken in this sector as a result of the investment by the drone service
- Capital written off by other delivery agencies as a result of losses incurred
- Jobs not created or lost as a result of business transferred to drones

Reductions in expenditure in other areas in the local economy

The above is a rough sketch of the issues to be analysed in a proper economic assessment. I would recommend that an independent economic analysis that takes account of all the investment and income flows and job losses as well as job creation be undertaken under the direction of the Committee.

Terms of Reference 1(f) any other relevant matter:

It has become quite clear from public statements that the Civil Aviation Safety Authority regards its mandate with respect to drones to be limited to safety issues. There is therefore a regulatory gap that needs to be filled to provide a framework to deal with the other issues raised by the introduction and operation of drones.

I therefore recommend that a Drone Regulatory Authority within the ACT Government and accountable to the ACT Legislative Assembly be created with the following mandate:

- To advise the ACT Government on the regulation of all matters arising from and incidental to the operation of drones in the ACT, other than those that fall within the scope of CASA
- To manage the regulatory framework for the operation of drones within the ACT

Issues arising from the operation of drones, that require regulation, include:

- Amenity and noise issues affecting both humans and companion animals
- Environmental impacts within urban areas, farmland, national parks and wilderness areas, respectively
- Privacy issues
- Licensing of operators
- Complaint mechanisms

Independent studies need to be undertaken under the direction of the Drone Regulatory Authority into the implications of drone use on a city wide basis for:

- Residents, including issues of noise pollution and related amenity impacts
- Native wildlife, particularly birds

How amenity and environmental impacts should be assessed and weighted relative to the economic impacts in decision making about the use of drones in the ACT are an issue on which technical studies can be of assistance but in the final analysis these are judgments on which community input should be sought..

Yours truly

Dr Douglas Hynd

[Redacted signature]

[Redacted text]

Email: [Redacted email address]



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Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 07

Date Authorised for Publication: 7 February 2019

Mr Jeremy Hanson MLA
Chair
Standing Committee on Economic Development and Tourism
GPO Box 1020
London Circuit
Canberra ACT 2601

Dear Mr Hanson

Inquiry into Drone Delivery Systems in the ACT

Thank you for the opportunity to make a submission to the inquiry into drone delivery systems in the ACT (the inquiry) which was passed by resolution by the Standing Committee on Economic Development and Tourism on 1 November 2018.

Context

Drones, also known as Remotely Piloted Aircraft Systems (RPAS), are currently the fastest growing sector in civil aviation and this technology is expected to play an increasingly significant role in the aviation industry over the next 20 years. RPAS operations are also offering enormous opportunities across a number of other industry sectors and like any rapidly emerging technology, they are challenging existing policy and regulatory frameworks. Ultimately, this technology is a practical reality and governments and industry must cooperate and collaborate to maximise the benefits while managing the risks.

As Australia's Air Navigation Service Provider (ANSP), Airservices has an obligation under the *Airservices Act 1995* (Airservices Act) to promote and foster civil aviation, which includes RPAS. The task of facilitating and ultimately integrating RPAS operations into existing, conventionally-piloted aviation systems is recognised as a significant challenge in Australia as well as globally. The RPAS sector is continuing to grow rapidly and is impacting air traffic management (ATM) operations in Australia. From September 2016 to June 2018 the number of commercial RPAS operators who registered their intent to operate with the Civil Aviation Safety Authority (CASA) grew from 600 to 6,000.

Our role

Airservices is a government-owned organisation that provides safe, secure, efficient and environmentally responsible aviation services to the industry and travelling public.

Each year we manage more than four million aircraft movements carrying more than 156 million passengers, and provide air navigation services across 11 per cent of the world's airspace. Safety is, and will always remain, the most important consideration for Airservices when managing Australia's airspace. This is a requirement of the Airservices Act and the expectation of the government, our customers and the Australian public.

Airservices is responsible, under certain conditions, for assessing RPAS applications received from CASA and determining whether access is approved and whether any conditions need to be imposed. We assess applications when operations will occur within three nautical miles (approximately 5.5 kilometers) of an aerodrome with an air traffic control tower and for all operations above 400 feet above ground level in controlled airspace (airspace managed by air traffic controllers which requires an air traffic control clearance to enter). However, Airservices has no powers to restrict aircraft flights (including RPAS) outside controlled airspace. Airservices responsibilities for the management of RPAS in ATM operations are derived from various requirements, including *the Civil Aviation Act 1988*, Civil Aviation Safety Regulations (CASR) Parts 101 and 172 as well as the Airservices Act.

Managing aircraft noise

Managing aircraft noise in Australia is a shared responsibility between Airservices, airlines and aircraft operators, airports, federal government agencies and state and local governments.

Airservices has no regulatory powers to establish maximum noise levels or enforce compliance related to aircraft noise.

There are currently no federal noise regulations pertaining to RPAS. The federal Air Navigation (Aircraft Noise) Regulations 2018 are based on International Civil Aviation Organization (ICAO) noise standards for aircraft types and models. However, RPAS are not included in these international standards and are not covered by the Australian regulations. The Department of Infrastructure, Regional Development and Cities administers these regulations.

Airservices works with partners in the aviation industry to minimise the impacts of aircraft noise on communities around airports where possible and safe to do so. Our role involves:

- ensuring that flight departures and arrivals are designed to minimise noise impacts
- providing information about aircraft noise
- monitoring aircraft noise around major airports, and
- providing a national Noise Complaints and Information Service (NCIS).

For further information on the different roles and responsibilities when it comes to managing aircraft noise, please see:

<http://aircraftnoise.com.au/working-together/who-is-responsible-for-what/>.

Bonython trial

The drone delivery trial undertaken by Project Wing in the ACT occurred outside controlled airspace, beyond three nautical miles of Canberra Airport at altitudes below 400 feet, and did not require Airservices' authorisation. The trial was assessed and approved by CASA and ACT government agencies. Airservices involvement with the trial has been through handling of noise complaints by the NCIS.

Over the course of the trial, submissions were received from six complainants who were impacted by the noise from drones. Five of the six complainants were unhappy about the frequency of drones over their area, three raised privacy concerns and one was concerned about safety. The role of Airservices in authorising the trial and our ability to address concerns by controlling where or how the drones flew, or our ability to stop the trial all together, were common misconceptions from complainants. One complainant also felt there was a lack of consultation with the community before the trial commenced.

Airservices role into the future

One of the challenges for Airservices is that RPAS is a broad term that can be applied to many types of remotely piloted aircraft or systems with different equipment levels and capabilities. Airservices has taken a number of steps to facilitate the operation and integration of RPAS in Australia. We have developed an Operational Concept for RPAS in controlled airspace which identifies our responsibilities and the principles that underpin current processes and future developments for safe RPAS integration. This information is available as an educational tool on our website. We have initiated enhancements to our safety performance, monitoring and reporting systems to improve the management of RPAS operational safety. This includes changes to occurrence reporting to better capture and trace RPAS safety-related occurrences. Where proposed operations will occur within three nautical miles of an aerodrome we have developed a rule set to assist our air traffic controllers to assess and approve operations that do not pose an unacceptable risk to conventional aircraft. We have also worked more closely with industry and engage in a number of safety promotion activities through various media and industry engagement forums.

Airservices is in discussions with several providers who have RPAS detection solutions. These products may provide real-time statistical activity information in and around airports, supplementing our current reporting capabilities. The detection and counter measures domain is in rapid development and outcomes may require regulatory reform.

Starting mid-2019, Airservices intends to conduct a number of trials, testing international operational concepts under development, with an aim to gather data, develop our knowledge on how this technology might be integrated and to better understand the current limitations of the technology.

In closing, safely managing the integration of RPAS operations into our airspace requires a consistent approach across aviation portfolio agencies. Airservices, the Australian Transport Safety Bureau (ATSB) and CASA will continue to collaborate with each other and state and territory agencies to ensure that Australia's policy and regulatory framework keeps pace with this rapidly growing sector.

I trust this information has been of assistance.

Yours sincerely



Jason Harfield
Chief Executive Officer

14 January 2019



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Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 08

Date Authorised for Publication: 7 February 2019

From: [Elissa O'Keefe](#)
To: [LA Committee - EDT](#)
Subject: Inquiry into drone delivery systems in the ACT
Date: Wednesday, 23 January 2019 5:19:19 AM

Dear Sir/Madam,

My major concerns with regard to the drone delivery systems in the ACT are as follows:

1. Excessive noise including noise **within** my home
2. Disruption of the bird ecosystem
3. Stress of pets, particularly dogs
4. Privacy

I am a resident of one of the trial sites, Bonython.

Elissa Dickson



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Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 09

Date Authorised for Publication: 7 February 2019

From: [Martin Wilson](#)
To: [LA Committee - EDT](#)
Subject: Submission - Inquiry into drone delivery systems in the ACT
Date: Wednesday, 23 January 2019 5:23:08 PM

I wish to provide the following input into the above enquiry.

Name: Martin Wilson

Full Postal Address: [REDACTED]

Contact No.: [REDACTED]

Background:

I first became aware of these drones around about the 1st or second week in August 2018 when, one Thursday, a single, large drone began a series of passes directly over my home.

As I work from home the noise was the very first distracting and annoying issue that became my immediate concern.

As the number of drones and flights seemed to escalate very quickly so did the nature of the noise both by volume and scale.

I became concerned about taking my one year old Grandson outside should one of these drones crash and put him/my family at risk. I also became concerned about how this was being policed and what were the liability management policies around this 'type' of business. They have been flying quite low, in some instances I estimate no more than 100 metres above my home, and definitely out of 'line-of-sight'.

Over the next few days/weeks I came to understand the background to this 'annoying' trial.

In order of impact the following issues:

1. Noise - The drones are large and do actually sound like an F1 car a couple of blocks away. The sound is not like traffic or lawn mowers and has no regular pattern. The noise can be heard from inside my home and cannot be easily blocked. It increases with proximity and number of drones.

On a Bureaucratic note I understand that CASA has approved this trial but take no responsibility for noise related issues "As the safety regulator, the issue of aircraft (drone) noise is not in our remit. Wing has included some information on the noise drones make on their website."

The only reference I could find on the provided link to Wings website at the time was :
"How high do these planes fly? Can I see them or hear them?"

Our delivery drones fly up to 400 feet above the ground. Our goal is to design a system that is as unobtrusive as possible during takeoff, flight and delivery."

- This is a blatant sales pitch that makes me feel that the "Noise Issue" is probably an issue no one in the approval process wants to or can address.

2. Lack of Governance and Communication - I, or neighbours I spoke to, were never approached about this trial. Not at all, in any way or format. Neither by the company running the 'Trial', the government or any other interested parties. They just started up one day.

I found that the ACT government (via Mick Gentleman) had initiated this trial without seeking input from residents or constituents. Remarkable representation. Any protocols, procedures, feedback mechanisms were not provided for.

I wrote to Mick Gentleman early October 2018, he never bothered to respond. Again, Remarkable representation.

I came to understand that the ACT Government had, in conjunction with CASA, provided exemptions to the company, Project Wing, to operate without government or independent management or monitoring of air safety or controlled space protocol over our suburb. Why were rules relaxed for this trial?

3. Impact on wild life and domestic animals - I have seen and have video of a magpie attacking a drone on a delivery run - on every delivery during mating season to the same address.

The poor animals instinct makes them easy fodder for these 12-14 prop drones. I have seen one injured magpie resulting from this. The native birdlife becomes scarcer when the drones are operational and some neighbourhood dogs take up the call to bark themselves hoarse. Further disruption to the neighbourhood. Pitting neighbour against neighbour.

4. Negligence - Are we covered by public liability? What our our privacy rights if any? (I understand the drones film all flights).

5. Trial Outcomes - What are they? Why the lack of transparency? Who is selling off our privacy and peacefulness and why? What are the perceived benefits of this particular service to people? What money is exchanging hands in regard to this business? Why is there a lack of recourse for people to express their opinions of this business?

This is not a way of endearing support for a government that so poorly initiated and thrust this on our suburb.

Martin Wilson



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Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 10

Date Authorised for Publication: 7 February 2019

From: [Reg Butler](#)
To: [LA Committee - EDT](#)
Subject: Submission - Inquiry into drone delivery systems in the ACT
Date: Wednesday, 23 January 2019 7:30:21 PM

Reginald John Butler, [REDACTED]
[REDACTED]

My submission follows, addressing some of the terms of reference.

The decision to base the trials of the technology in the ACT and surrounding region – The basis for this decision, and the public consultation process, were flawed and the Assembly should take steps to ensure they are not repeated, either for the ‘trial’ to operate from Mitchell or for other ‘world first’ social experiments. My understanding is as follows. The ACT Government, including the responsible Minister, did not undertake any public consultation with the general public or with the residents of the suburbs to be affected. The ACT Government seems to have washed its hands of any responsibility for the conditions of the trial and of any its negative impacts. These points should have been addressed in deciding whether to allow invasive technology to be forced upon residents. Why Bonython was chosen as the trial site is unknown. The decision to let the drones operate from a site next to a dog club is unbelievable, given the negative affect the drone noise has on animals. The responsible Minister seems to have sided with the company involved at every opportunity when negative impacts have been raised with him. There is a question whether he has an undeclared conflict of interest, given his passionate support for the company and refusal to consider representations from affected residents.

The extent of regulatory oversight of drone technology at various levels of government – There has effectively been no regulatory oversight. The company involved seems to be ‘self-regulating’ and reporting on the success or otherwise of the trial. They do not seem prepared to take any concerns raised with them seriously. CASA has washed its hands of responsibility for regulatory oversight, except for giving legal exemptions from drone laws. No one seems interested in privacy concerns with video footage taken over private properties. No one is interested on the serious noise issues affecting residents.

The extent of any environmental impact as a result of trialing drone delivery technology on (i) residents within the trial area; (ii) native wildlife; (iii) domestic animals - The Chief Minister should be censured for his comments on radio belittling the concerns of residents negatively affected by the trial. There is a large body of evidence from residents in the trial area of the serious noise effects on health and wellbeing of residents and their pets, and on native birds, and the noticeable difference on days the drones weren’t operating. I am sure these will be covered in other submissions to the inquiry in detail. If drones are safe, why are they not allowed to fly on total fire ban days?

Ways to improve the use of drone delivery technology within the ACT; any other relevant matter – Commercial delivery using drones should be banned in residential areas in the ACT, whether the highly intrusive noise of these drones can be reduced by RE-design or not. The risks and negative impacts on

residents, domestic animals and the environment are unacceptable.



LEGISLATIVE ASSEMBLY
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Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 11

Date Authorised for Publication: 7 February 2019

INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT

Invitation of Submissions

The Standing Committee on Economic Development and Tourism is calling for submissions to its inquiry into drone delivery systems in the ACT.

“The Committee would like to hear from all parties involved in, or affected by the trial, including residents, companies and regulators.”

Submission from Bonython Resident Mark Rowland:

I live on the western fringe of Bonython, which is reasonably close to the Project Wing droneport. On drone operating days, my area is subject to repeated overflights of drones. With windows open, we can actually hear the drones being warmed up at the droneport prior to the delivery runs commencing.

I object to these devices flying over my place of residence, for the following reasons:

- Unlike satellites, planes or helicopters, the Project Wing commercial drones fly at low altitude and are therefore prominently visible and audible.
- The noise of the drones is a high pitched whine that can be heard inside a house (with windows shut) and the noise is *especially* loud at the point of goods delivery when the goods are lowered to ground.
- Repeated exposure to the drone noise is annoying and interferes with the pre-existing suburban amenity. Overflights are common. Customers frequently order a quantity of goods that requires multiple drone deliveries for the order to be fulfilled. Thus, drones make repeat flights along the same flightpath until a customer has his/her order fulfilled.
- Residents that live close to the droneport are subject to the greatest level of interference, as most overflights must take place over the western fringe of Bonython in order for a drone to reach its target delivery point in the east or south of the suburb.
- The drones can fly overhead along any path the operator chooses, therefore any residence can, potentially, be affected by repeated overflights.
- We purchased our home knowing that we were a long way away from the Canberra airport flight paths. Yet now we have been subjected to the introduction of drone overflights, without any opportunity to object or voice our concerns.
- Project Wing has been granted rights to operate drones over our heads without any form of consultation with the community. The process of granting approval to Project Wing has occurred in a back-to-front manner. The Bonython community should have been asked for its approval to allow the so-called ‘trial’ before approval was granted by authorities.
- There are no airspace rules governing drone traffic. For example, if a resident flies a recreational drone, what rules apply to which drone must give way – the recreational drone or the commercial drone? Where does fault lie if a recreational drone collides with a commercial drone and causes damage or injury at ground level? The lack of any airspace

rules is a chaotic, 'wild west' approach and Project Wing's 'trial' in Bonython should NEVER have been allowed to go ahead without consideration of all airspace issues.

- Project Wing drones carry a navigation camera. Therefore data is captured during flight by their drones. What guarantee exists that such data cannot or will not in the future be accessed illegally with potential breach of the privacy rights of residents? If Project Wing sells its drone operations to another party, what controls exist to prevent privacy breaches by the acquiring party?
- The drone delivery system in Bonython has been a less than fully transparent activity and raises concerns that the Project Wing operator (or its parent, Google Alphabet) has received preferential treatment by the ACT Government and CASA. Where can a member of the public read the rules governing access to residential ACT airspace by commercial drone operators? Are there any rules? If yes – what consultation process was followed and when and where were they published?
- I object to the commercialization of ACT residential airspace. While I support the use of drones for emergency purposes in residential airspace, residents are currently spoiled for choice when it comes to purchasing discretionary goods and chattels (Uber eats, food deliveries, online shopping with road delivery etc). There is no need to invade the airspace of residential areas to provide a 'technologically glamorous' alternative.
- Residents have a right to expect the airspace above them will not be polluted by noise, aesthetic or to be potentially spied on. The Project Wing drones are, in effect, trespassing over ACT resident's properties by flying so close (usually about 100 feet is the level at which they zoom over). Aircraft (except emergency and government helicopters) keep a respectable distance from residential property by flying at heights typically tens of thousands of feet.
- Recently (19th January 2019), I witnessed two Project Wing drones almost collide with each other as they flew over my house. I was with my family in our driveway and we all witnessed it – if there had been a collision, we could easily have been hit by fragments of the drones. Which leads into the next point.
- If Project Wing is entitled to operate commercial drones over ACT residences, then any other commercial operator will rightly expect to receive approval to also fly its drones over ACT residences. Potentially, there could be competition for delivery of all sorts of discretionary consumer goods. The skies could become chaotically thick with drones buzzing to and fro with their payloads. The risk of collision or third party injury or damage will increase. What will it take for Governments to realize that commercial drone deliveries in residential airspace should never have been allowed in the first place? The visual disruption and noise will be extremely undesirable and would not be allowed over government land.
- Some residents support the commercial drone delivery system, while others object to it. The effect, already observed, has been that some neighbours are now unfriendly to each other, where previously there was never a problem. This side-effect on ACT society of drone deliveries is **highly** undesirable and should be stopped by immediately ceasing the commercial drone delivery system forever.
- The drones interfere with ACT residents' family life. It is morally and ethically wrong that ACT residents are subject to this drone delivery 'service' without any recourse. This is a direct violation of our human rights: *Article 12 of the Universal Declaration of Human Rights*¹ states "No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honour and reputation. Everyone has the **right** to the protection of the law against such interference or attacks".

¹ <http://www.un.org/en/universal-declaration-human-rights/>

Summary

I object to commercial drones and recreational drones flying over the airspace of my residence. I want it to stop. My vote at the next ACT election will be reflected in the way I vote. The ACT Government and CASA should never have agreed to arbitrarily approve an unsolicited request to operate a commercial drone trial in the suburb of Bonython.

Mark Rowland

[REDACTED]

23 January 2019

Email: [REDACTED]



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 12

Date Authorised for Publication: 7 February 2019



*AlphaBeta Advisors
Level 1
45 Novar Street, Yarralumla
ACT 2600
22 January 2019*

Standing Committee on Economic Development
Parliament of the Australian Capital Territory
LACommitteeEDT@parliament.act.gov.au

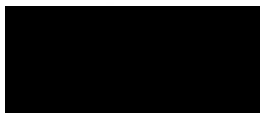
Re: Drone Delivery Systems Inquiry

Dear Committee,

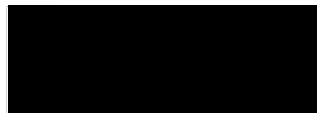
Please find attached a report that AlphaBeta prepared for Wing, a drone delivery company. It sets out our independent analysis of the potential economic impacts of drone deliveries in the ACT.

You may find it informative in your inquiry on Drone Delivery Systems. We would be very happy to discuss this report with you.

Sincerely,



Kate Pounder
Director



Jim Minifie
Principal

*FASTER, GREENER
AND LESS EXPENSIVE*

THE POTENTIAL IMPACT OF DELIVERY DRONES IN THE AUSTRALIAN CAPITAL TERRITORY



NOVEMBER 2018

Prepared by AlphaBeta for Wing

alphaBeta
strategy x economics

Important Notice on Contents – Estimations and Reporting

This report has been prepared by AlphaBeta for Wing. All information in this report is derived or estimated by AlphaBeta analysis using both proprietary and publicly available information. Where information has been obtained from third party sources and proprietary research, this is clearly referenced in the footnotes.

The amounts in this report are estimated and specified in 2017 Australian dollars. Where conversion rates have been used, these are stated in the footnotes.

αlphaβeta

strategy x economics

AlphaBeta is a strategy and economic advisory business serving clients across Australia and Asia from offices in Singapore, Sydney, Melbourne and Canberra

Sydney

Level 7, 4 Martin Place
Sydney, NSW, 2000, Australia
Tel: +61 2 9221 5612
Sydney@alphabeta.com

Canberra

Level 1, 45 Novar Street
Yarralumla, ACT 2605, Australia
Canberra@alphabeta.com

Melbourne

Melbourne@alphabeta.com

Singapore

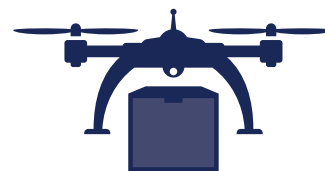
1 Upper Circular Road
#04-01
Singapore, 058400
Tel: +65 6443 6480
Singapore@alphabeta.com

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Drones will deliver benefits to ACT businesses, consumers and communities



BENEFITS FOR LOCAL BUSINESSES

Grow retail sales in the ACT by

\$30-40 million

of which **\$10-15 million** could accrue to **small businesses** in the ACT in 2030



Reduce delivery costs for businesses by up to

\$12 million

per year by 2030.* Delivery costs for some items such as takeaway food could fall in the long term by up to

80-90%



Expand the reach of delivery businesses by up to

4x as many consumers

by bringing more households into range



BENEFITS FOR CONSUMERS

Save

3 million hours

for **consumers** in 2030 by replacing customer pick-up journeys, as well as **delivery times** that are

60-70% faster

than today's methods



Save consumers

\$5 million

per year in **reduced delivery costs by 2030.***

Delivery costs for some items such as takeaway food could fall over the long term by up to

80-90%



Expand choice for consumers by giving them access to up to

4x as many merchants

by bringing more retailers within delivery range of their home or workplace



BENEFITS FOR SOCIETY

Reduce traffic congestion by replacing

35 million vehicle kilometres

each year. This could also avoid up to **70 road accidents** each year



Reduce annual **CO₂ emissions** by

8,000 tonnes

due to fewer road vehicle deliveries. This is equivalent to the carbon storage of **250,000 trees**



* Assumes consumers receive a fee decrease that is proportional to the reduction in underlying costs

EXECUTIVE SUMMARY

Drones have the potential to transform retail around the world, and the ACT is at the forefront of this change, with regional trials demonstrating how delivery drones can bring a wider range of products within rural and suburban consumers' reach. Flying above the traffic, drones can quickly and cost-effectively deliver small packages of food, medicine and other household items, saving businesses and consumers time and money, while also helping to reduce congestion, greenhouse gas emissions and accidents on the road.

The ACT is at the forefront of global drone technology. As one of the first global delivery hubs for Wing, the ACT has had drones deliver thousands of food, drink, pharmaceutical and household items from local businesses to suburban homes, demonstrating the feasibility of and consumer appetite for drone delivery in Australia.

Drones are expected to have an important role to play in "last-mile" delivery – that is, the transport of products from the store to the home. Last-mile delivery is one of the most costly segments of the supply chain, accounting for 15 to 20% of the total cost of retail transactions in the form of delivery fees or the time spent by consumers picking up their goods. The ACT incurred a total of \$1.1 billion of last-mile delivery costs in 2017.

Last-mile delivery is particularly challenging in Australia, where logistics providers face congested city roads at one extreme and sparsely populated

countryside at the other. Consumers are doing more of their shopping online, but still face limited delivery options compared with those available overseas, where "same-day" delivery services are more common.¹

The cost and time taken for items to be delivered in Australia not only limits the range of products available to consumers at home; local businesses are also limited in their ability to reach customers who either need or demand home delivery.

Drones could be a cost-effective solution for small items needing to travel distances of 1 to 10 km urgently. Based on these criteria, drones could deliver up to 4-6% of household purchases in 2030 in the ACT, helping to make local businesses more competitive, providing greater choice and convenience for customers, while also reducing the total number of motor vehicle journeys in the region.

Road transportation accounts for 69% of the ACT's greenhouse gas emissions (compared with only 16% nationally), and replacing some of those journeys with delivery drones could have a significant environmental impact. By using drones to deliver 4-6% of its household purchases, the ACT could reduce the number of accidents on its roads, as well as carbon emissions by about 8,000 tonnes a year – equivalent to the carbon absorbed by 250,000 trees.

¹ SmartCompany (2017), "The last mile: Why Australian shoppers won't see same-day delivery from Amazon for years to come"

EXHIBIT 1

The impact of drone delivery in the ACT was analysed across three areas



The nature and size of each of these types of benefits is explored below.

Benefits for local businesses

Drone delivery could result in several important benefits for ACT businesses:

- **Expanding market reach.** Drones travel faster than all existing forms of last-mile delivery, reaching a maximum speed of 120 km/h. For some types of transactions, this additional speed allows businesses to offer instant or same-day delivery to customers in a wider geographical area. The delivery radius for restaurants, for example, could increase from an average of 5 km currently to 10 km with 2030 drone technology.² For a restaurant located in central Canberra, this could bring an additional 50,000 households into range.³
- **Reducing delivery costs.** ACT businesses, including food outlets, incur costs as part of providing delivery to customers. These costs include fees to delivery service providers (e.g. Uber Eats or Australia Post), as well as the cost associated with performing deliveries themselves. These costs make it unprofitable for some businesses to offer last-mile delivery at all, despite a growing customer preference for online shopping and delivery. The lower cost of drone delivery could result in a saving of up to \$12 million to businesses by 2030.⁴
- **Generating increased sales.** By reducing delivery costs and increasing convenience, drone delivery will make it easier and less costly for consumers to purchase items in the ACT. As a result, consumers will be able purchase more items, or switch to higher-value items. These effects combined are

² Current range of 5 km based on the current Uber Eats and Deliveroo delivery radius on 8 October 2018 in the ACT, estimated based on the furthest restaurant delivery destination available from Canberra central.

³ Potential increase in households estimated by count of households within 5 km radius of Canberra central compared with count of households within 10 km radius. ABS Census (2016)

⁴ Assumes retailers receive a delivery cost reduction that is proportional to the reduction in underlying costs due to drone delivery.

expected to generate up to an additional \$12,000-\$16,000 a year for a retail business or \$30-40 million in additional sales for the whole of the ACT in 2030.⁵ Of this, \$10-15 million could accrue to small businesses in the ACT.

- **Enabling more businesses to deliver.** Drones could allow more local businesses to offer last-mile delivery, giving them a new way to reach customers. This could allow more specialised businesses to thrive, and encourage and enable new businesses to engage in e-commerce.

Importantly, the business benefits outlined in this report exclude the profits generated by any third-party drone delivery providers. Instead, we focus on the benefits for retailers that partake in drone delivery, whether they do so in-house or via an outsourced drone service provider.

Benefits for consumers

Drone delivery has the potential to generate significant benefits for consumers in the ACT. These include:

- **Improving quality of life for homebound people.** Drones could deliver a wider range of food, medicines and other products to elderly, disabled, or otherwise homebound people for whom visiting shops and restaurants may be difficult or impossible.
- **Saving time.** Drones travel faster than all other forms of last-mile delivery and have the potential to shorten delivery times by 60-70%. Further, for suitable transactions (which are described in Section 2), drone delivery reduces the need for consumers to travel to pick up their items. By eliminating an estimated 4-5 million 'pick-up' journeys in 2030, drone delivery has the potential to save consumers 3 million hours, which is worth \$70 million if valued at today's average earnings.⁶ Rapid drone delivery enables consumers to have greater control over their time, knowing for certain that a delivery will

arrive within a short time interval.

- **Reducing delivery fees.** In 2017, ACT consumers paid an estimated \$30 million in last-mile delivery fees on transactions within the ACT.⁷ Because drones cost less to operate than current delivery methods, businesses will be able to charge lower delivery fees to consumers for certain types of deliveries. Delivery costs for some items, such as takeaway food, could fall by 80-90%. This could save ACT households a total of up to \$5 million in 2030.⁸
- **Expanding product variety.** Because the speed of drones allows retailers to offer instant or same-day delivery to a larger geographical area, customers in the ACT would thus have a wider range of products to choose from. An ACT suburb that currently receives delivery from 50 restaurants could expand their reach to over 150 food outlets via drone – a three-fold increase.⁹

Benefits for society

By reducing the number of motor vehicle journeys taken in fulfilling last-mile deliveries in the ACT, drone delivery has the potential to reduce emissions and make ACT roads safer.

- **Reducing the number of motor vehicle journeys.** By replacing traditional forms of delivery for certain types of transactions, drone delivery can reduce the number of motor vehicle journeys on ACT roads. Preliminary estimates suggest that drone delivery could result in 35 million fewer motor vehicle kilometres on ACT roads in 2030.
- **Reducing greenhouse gas emissions.** Small drones produce fewer emissions per package delivered than today's road vehicle delivery options. Flying a drone emits the equivalent of about 25 grams of greenhouse gas when delivering a small package, compared with the 296-728 grams emitted by delivery trucks. Items that are personally picked-up by a purchaser via car emit 4,600 grams of greenhouse gas per

⁵ Relevant businesses defined as food and store-based retailers, based on 2017 business counts from the ABS.

⁶ Average earnings per person of \$23 per hour, based on \$34 average earnings for those employed in the ACT, adjusted for employment-to-adult-population ratio of 68%.

⁷ Includes fees for last-mile transport only and does not include transactions sent from outside of the ACT.

⁸ Assumes consumers receive a fee decrease that is proportional to the reduction in underlying costs.

⁹ Restaurant count based on the number of restaurants available on Uber Eats and Deliveroo, accessed from Yarralumla on 8 October 2018. Potential increase in restaurants based on the number of restaurants and cafes currently delivering within a 10 km radius of Yarralumla.

package.¹⁰ By replacing these more polluting methods, drone delivery could eliminate about 8,000 tonnes of greenhouse gas emissions by 2030, equivalent to the carbon storage of around 250,000 trees.¹¹

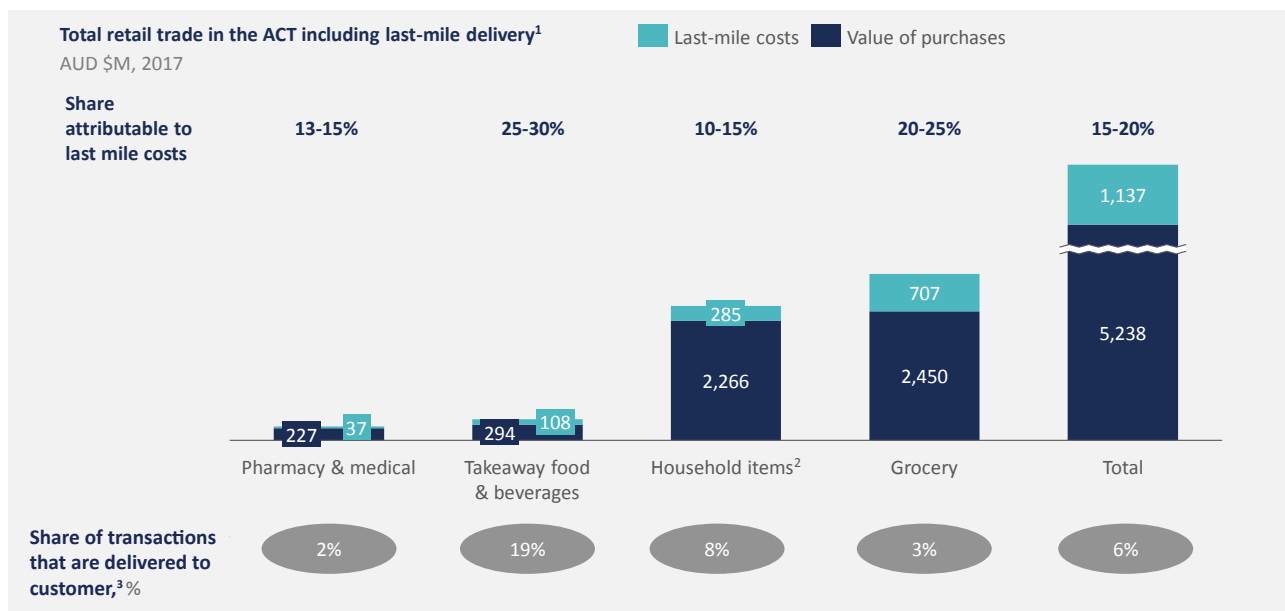
- **Reducing road accidents.** In 2016 there were 7,911 motor vehicle accident on ACT roads.¹² This represents two accidents for every million kilometres travelled by motor vehicles. If drone delivery is able to reduce the number of motor vehicle journeys by 0.6% by replacing road-based deliveries and pick-ups, this could result in 70 fewer accidents on ACT roads.

The last mile is a costly challenge

“Last-mile” delivery from the store to the home is one of the most costly segments of the retail supply chain. Most of the last mile is accounted for either by consumers taking the time to pick up their own goods (around 94% of all transactions) or by paid delivery services (around 6% of all transactions). Consumers who pick up their own goods incur costs of time as well as a range of other potential expenses such as fuel, parking and other vehicle costs. Products delivered by retailers or delivery services can incur both explicit fees (such as the additional cost of delivery paid by the consumer) as well as implicit delivery costs (such as costs that are absorbed by the retailer or passed onto the restaurant). The average cost of last-mile delivery can account for 15-20% of the total cost of the item, which comes either from delivery fees or the time of consumers picking up their goods.

EXHIBIT 2

The cost of last mile delivery (or pick-up) was ~\$1.1bn in 2017, which represents 15-20% of the total value of retail trade in the ACT



¹ Excludes food consumed on-premise at restaurants/cafes

² Includes household goods, clothing & footwear, department stores, newspapers/books, other recreational goods and other retailing

³ Other transactions are picked up instore by customers

SOURCE: ABS Retail Trade (2017), AlphaBeta Transport Cost Model

¹⁰ Modelling of carbon emissions per delivery obtained from Stolaroff et al. (2018), “Energy use and life cycle greenhouse gas emissions of drones for commercial package delivery”, Nature Communications 9: 409. The estimates used in this paper exclude the fixed warehousing component (we consider the marginal emissions per vehicle trip only)

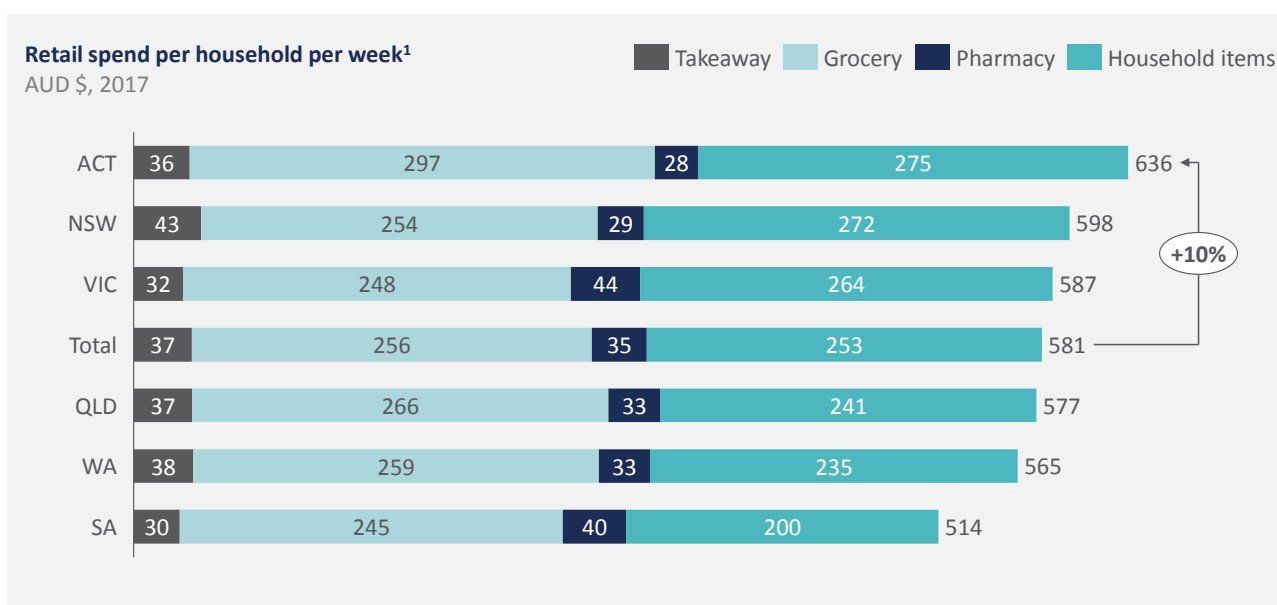
¹¹ This is otherwise expressed as 8,000 MT CO₂e.

¹² ACT Government (2016), ACT Road Crash Report

The ACT has the largest retail spend per household in Australia. In the ACT last year delivery cost amounted to around \$1.1 billion. By reducing delivery costs, drones have the potential to create massive value for both retailers and consumers.

EXHIBIT 3

ACT households spend more on retail than any other state, at \$636 per household per week – 10% above the national average



1 Excludes food consumed on-premise at restaurants/cafes but includes takeaway. Number of households based on 2017 population and 2016 household sizes by state. Excludes NT and TAS due to their smaller populations and lower data quality. The NT also has a high retail spending per household, at \$635.66 per week versus \$635.73 for the ACT
SOURCE: ABS Retail Trade (2018), ABS Census (2016)

Drone delivery is gaining momentum globally

Investment in drone technology has grown exponentially, driven in part by retail and logistics giants seeking to improve their operations, and in part by technology companies hoping to provide third-party drone delivery services to

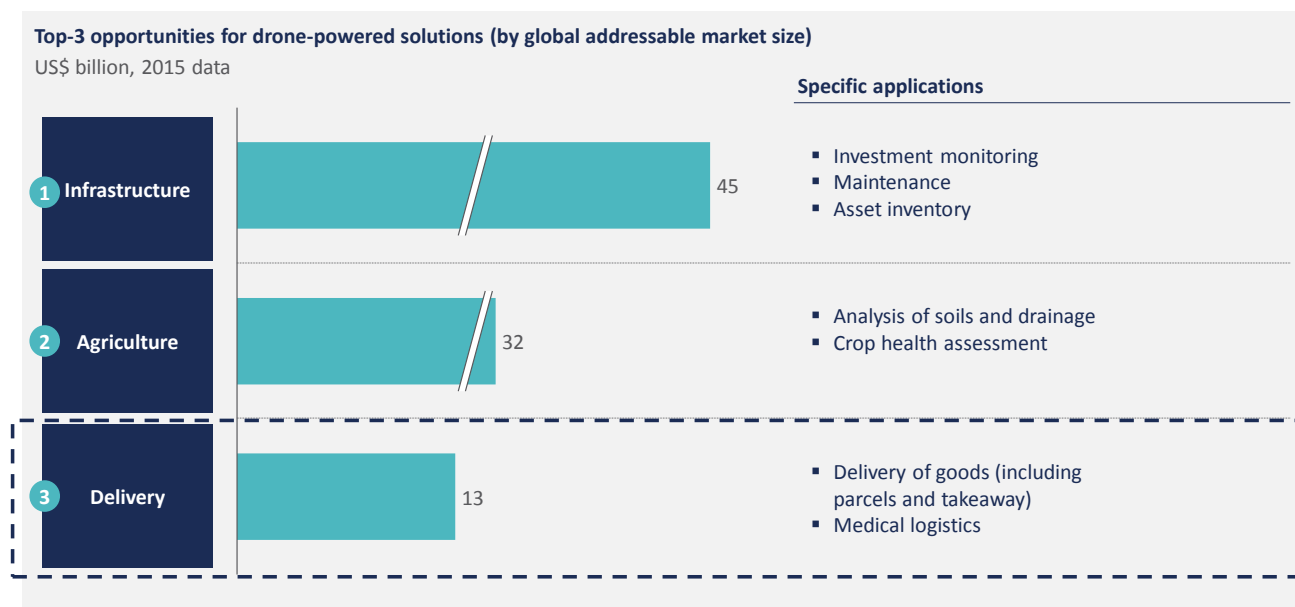
other businesses. Enterprises globally purchased almost three million drones in 2017, up 39% from 2.15 million in 2016.¹³ Further, the global market opportunity for commercial applications of drone technology is estimated at US\$127 billion, with drone delivery being the third-largest component (see Exhibit 4).¹⁴

¹³ Gartner (2016), *Forecast: Personal and Commercial Drones, Worldwide, 2016*

¹⁴ PwC (2016), *Clarity from Above*

EXHIBIT 4

Delivery is predicted to be one of the top-three commercial applications of drone technology globally



SOURCE: PwC (2016) Clarity from above

The shift toward drone delivery is already underway. Global technology companies such as Alphabet's Wing, Amazon, and start-ups such as Flirtey, Zipline and Flytrex are either using drones for delivery today or conducting advanced trials of the technology. Here in the ACT, Wing has completed about 2,500 deliveries of beverages, food, pharmacy and household items to selected areas, with the approval and oversight of the ACT government and Civil Aviation Safety Authority (CASA).

Drones will have an important role to play in last-mile delivery

Drone technology has the potential to become an important part of Australia's delivery sector, particularly in fulfilling 'last-mile' deliveries.¹⁵

In this report, drones are assumed to replace current delivery methods where:

- **Item and location satisfy physical limitations.** Based on our analysis of external literature, we expect drones to carry a maximum weight of 2.5kg and travel at a maximum speed of 120 km/h for a total round-trip distance of 20 km in 2030.¹⁶
- **Delivery is time-sensitive in nature** (needed either instantly or on the same day), and
- **Drones are a cost-effective way of transporting the item**, given the physical limitations and required delivery time. For example, deliveries that not required until the next day (or later) can be transported more cheaply by traditional forms of delivery (e.g. parcel vans) due to the potential for economies of scale.

¹⁵ 'Last-mile' deliveries include transporting an item to the customer's location from the retailer (if close) or local distribution centre

¹⁶ The 20 km round-trip range allows drones to deliver packages at up to a 10 km radius but not beyond. While large drones could service larger distances and carry heavier packages, these aircraft were not considered as part of the study due to their different cost structure and the potential emergence of cheaper alternatives for longer-range delivery (e.g. autonomous road vehicles)






The result of applying these criteria (as shown in Exhibit 5) is that drones are most likely to be used for small item deliveries made on an instant or same-day basis. For these time-sensitive transactions such as food and medicine delivery, drones are significantly less expensive (\$1-3 per delivery compared to \$14-17)¹⁷ and faster than other methods (more than twice as fast compared

with current methods of instant delivery such as Uber Eats). Standard, less urgent deliveries will likely be fulfilled by road vehicles (including autonomous ones) by 2030. These vehicles can achieve a lower average estimated cost per delivery than drones when economies of scale can be achieved (i.e. when standard parcel deliveries are grouped together and delivered along a route).¹⁸

EXHIBIT 5

There is a strong role for drones in fulfilling small deliveries on an instant and same-day basis

Role for drones by transaction type

Weight 	Distance 	Required delivery timeframe 			
		Instant delivery	Same day	Standard	
<2.5kg ¹	<1km	 Some drone potential			<div>Smaller drones (high short term potential) – focus of this report</div> <div>Potential role for drones in short-range deliveries, but less so due to the ease of customer pick-ups and the potential emergence of lower-cost ground-based delivery options</div>
	1-5km	 High drone potential			
	5-10km				<div>Strong role for drones in fulfilling small-size, medium-range deliveries on an instant and same-day basis:</div> <ul style="list-style-type: none"> ■ Low costs (i.e. between \$1-3 per delivery) make drones almost 90% cheaper than current delivery options ■ High speeds up to 120km/h make drones 2.5X faster²
	10km+				
>2.5kg	<1km				<div>For standard deliveries (not required until next day or later), traditional delivery modes (i.e. parcel van) are optimal due to economies of scale (cost per parcel \$1-2)³</div>
	1-5km				
	5-10km				
	10km+				
Current modes of delivery⁴ Approximately 95% of transactions are picked up, the rest are delivered using a range of methods		■ CAR: e.g. Uber Eats, Sherpa ■ BIKE: e.g. Deliveroo, Uber Eats	■ VAN: e.g. Coles home delivery, DHL same day, Australia Post same day	■ VAN: e.g. Australia Post standard parcel delivery, DHL and Toll standard delivery	

1 Assumes a maximum payload of 2.5kg and maximum range of 10km (20km round trip) for last-mile drone technology

2 Assumes a 10 km journey where a private car takes 20 minutes and a drone takes 8 minutes

3 Delivery costs refer to transport costs related to labour, fuel and depreciation. See appendix for details and assumptions

4 This list of example delivery modes is non-exhaustive.

Source: AlphaBeta analysis

¹⁷ Cost for 1-5 km instant delivery compared with van, car and bike.

¹⁸ McKinsey (2016), *Parcel delivery – the future of last mile*

It should be noted that larger drone technology has the potential to serve greater distances and heavier packages in the future. However the focus of this study is small drones due to greater certainty around the feasibility and economics of small-drone delivery.

Drones could deliver more than one in four take-away food orders, and up to 4-6% of all purchases in the ACT by 2030

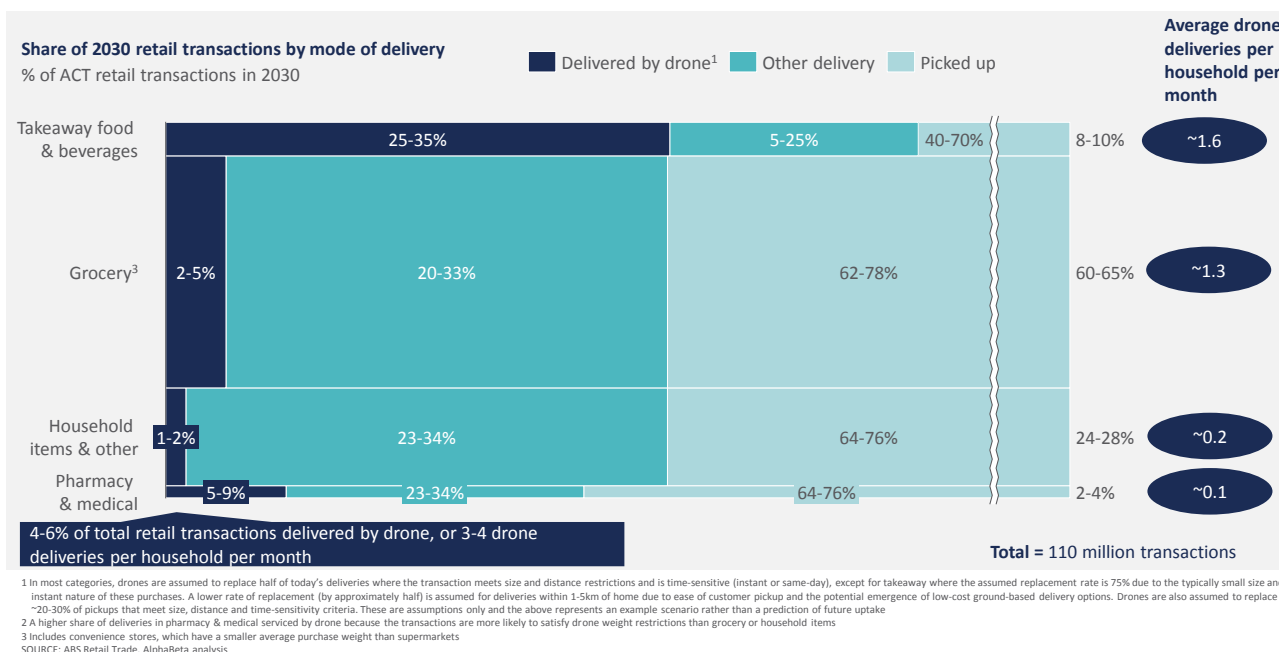
In 2017, ACT households made an estimated 90 million retail transactions, including groceries, pharmacy goods, takeaway food and other household items. Around 6% of those purchases were delivered to customers, while the remainder were picked up by customers travelling to the retailer's outlet.

The delivery landscape in 2030 will be different. Based on recent economic growth, ACT households will make an estimated 110 million transactions, and a greater share of these will be delivered.¹⁹ Takeaway delivery could reach 40-50% of total takeaway sales by 2030, with external estimates for online deliveries in other product categories ranging from 20-35%.²⁰

Drones will play an important role in this shift toward online delivery. It is estimated that drones could deliver up to 4-6% of household purchases in 2030 (Exhibit 6). There is significant variation by product category, with the greatest contribution of drones coming from takeaway food and beverages (due to the time-sensitive nature of takeaway food and small package sizes) and grocery (due to the high overall volume of purchases by ACT households).

EXHIBIT 6

In 2030, drones could deliver up to 4-6% of retail transactions, and up to 25-35% in some categories (e.g. takeaway)



¹⁹ Based on a conservative forecast GSP growth rate for the ACT of 2% p.a. from 2017-30 (which is assumed to be lower than recent growth since 2009 of 3.0% p.a. due to the rising share of services in Australia's GDP)

²⁰ Based on various sources including Morgan Stanley, Bankwest, Australia Post. See Appendix for details.

BENEFITS FOR LOCAL BUSINESSES



Expanding market reach

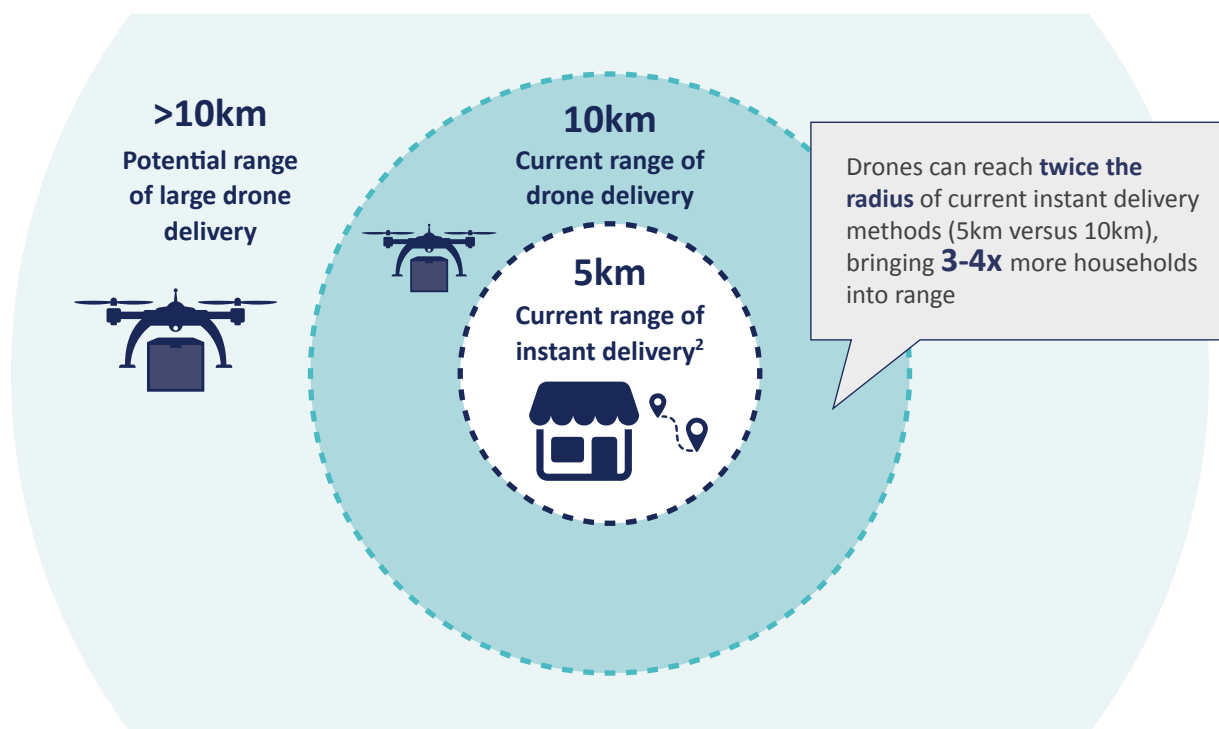
Drones can help ACT businesses reach more customers. The current radius of food delivery in Canberra, for example, is only about 4 or 5 km.²¹ Road delivery vehicles are too slow to get food in good condition to customers much further than that, so businesses focus just on nearby customers.

But drones can deliver a package 10 km in less time than it takes a car to drive 5 km, so the effective range doubles. Doubling the range can more than double the market each business can reach. For example, doubling the range to 10 km triples the number of households within range of a restaurant based in central Canberra, from 25,000 households to 75,000 households.²²

EXHIBIT 7

Drones can double the reach of instant delivery relative to current methods, bringing 3-4x more households into range

Range of current and future instant delivery methods¹



¹ Current range of 4-5 km based on the current UberEATS and Deliveroo delivery radius in the ACT, estimated based on the furthest restaurant displayed on the on 8 October 2018 from Canberra Central

² Based on Uber Eats and Deliveroo

Source: AlphaBeta analysis

Even within today's delivery range, drones can help businesses better serve their customers where speed matters, such as food and pharmaceuticals. Today an 'instant' delivery van takes about 15

minutes to complete a 10km trip. A drone can cover the same distance in less than 6 minutes, or more than 60% faster.²³

²¹ Current range of 4-5 km based on the Uber Eats and Deliveroo delivery radius on the 8th of October (2018) in the ACT, estimated based on the further restaurant delivery destination available from Canberra Central.

²² Household estimate based on population in relevant SA3 areas.

²³ Average van speed 40 km/h, average drone speed 100 km/h.

Reducing delivery costs

Delivery costs represent a significant expense for ACT businesses, especially in cases where delivery is time-sensitive. Restaurants currently pay around 30% of each order value to online delivery service providers.²⁴ Further, for other items, same-day parcel delivery alone can cost over \$30 (with a share of these costs borne by the retailer in some cases).²⁵ These costs make it unprofitable for some businesses to offer last-mile delivery at all, despite a growing customer preference for online shopping and delivery.

Drone delivery costs are likely to be up to 90% less expensive than existing methods of instant and same-day delivery. Even after factoring in the likely savings for delivery customers in the ACT,

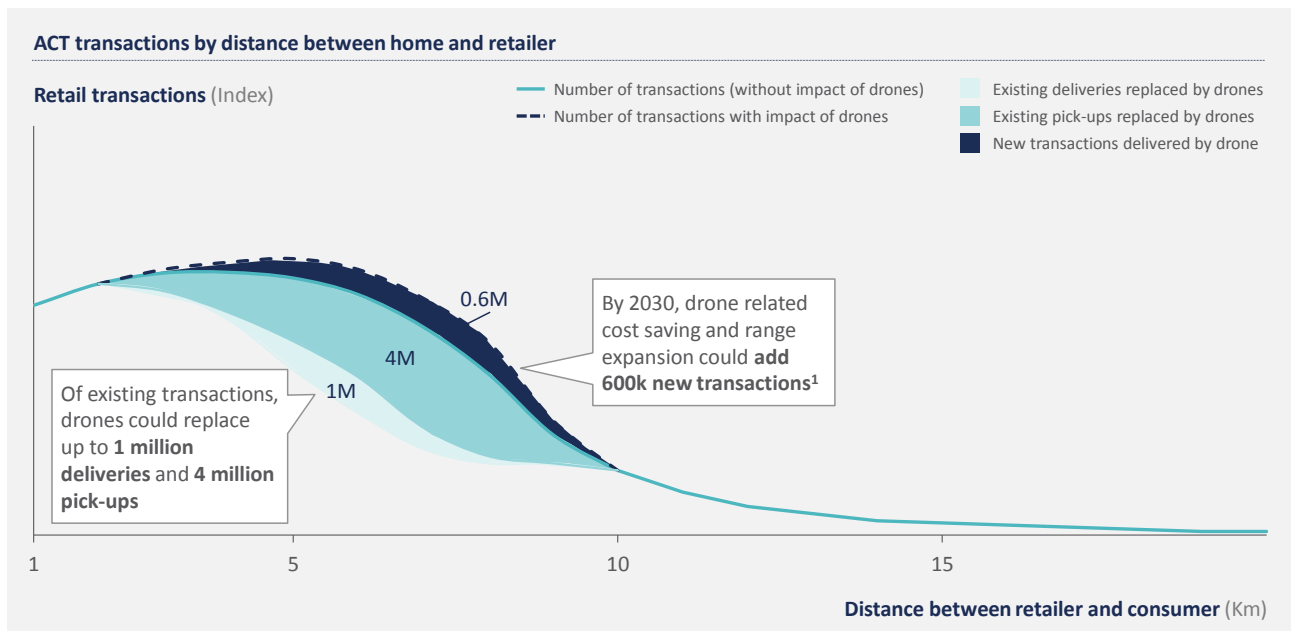
businesses there could save more than \$12 million in 2030.²⁶

Generating increased sales

As explored in Section 4 (Consumer Benefits), drones will save customers time and money. That cuts the effective cost of retail purchases, so consumers will make additional or higher-value purchases. While the value is hard to estimate precisely, drone delivery could generate an additional 600,000 annual retail transactions in the ACT in 2030, worth around \$30-40 million in revenue. This benefit could be as high as \$12,000-\$16,000 per relevant retail business.²⁷ About \$10-15 million, or just over one third of these benefits, is likely to be accrued by small businesses in the ACT.²⁸

EXHIBIT 8

Lower cost, greater range, and the increased convenience of drones could grow transactions in the ACT by 600,000



NOTE: Illustrative axis, retail transactions and distance between retailer and consumer are indicative
SOURCE: AlphaBeta analysis

²⁴ Based on the 2018 pricing model of Uber Eats.

²⁵ Based on 2018 pricing of Australia Post and Copenhagen Economics (2016), *Principles of e-commerce delivery prices*

²⁶ Assumes retailers receive a reduction in delivery costs proportional to the reduction in the underlying cost of delivery due to drones.

²⁷ Relevant businesses defined as food and store-based retailers, based on 2017 business counts from the ABS.

²⁸ Small businesses are estimated to contribute 34% of value added to the economy. Australian Small Business and Family Enterprise Ombudsman (2016), *Small Business Counts: Small Business in the Australian Economy*.

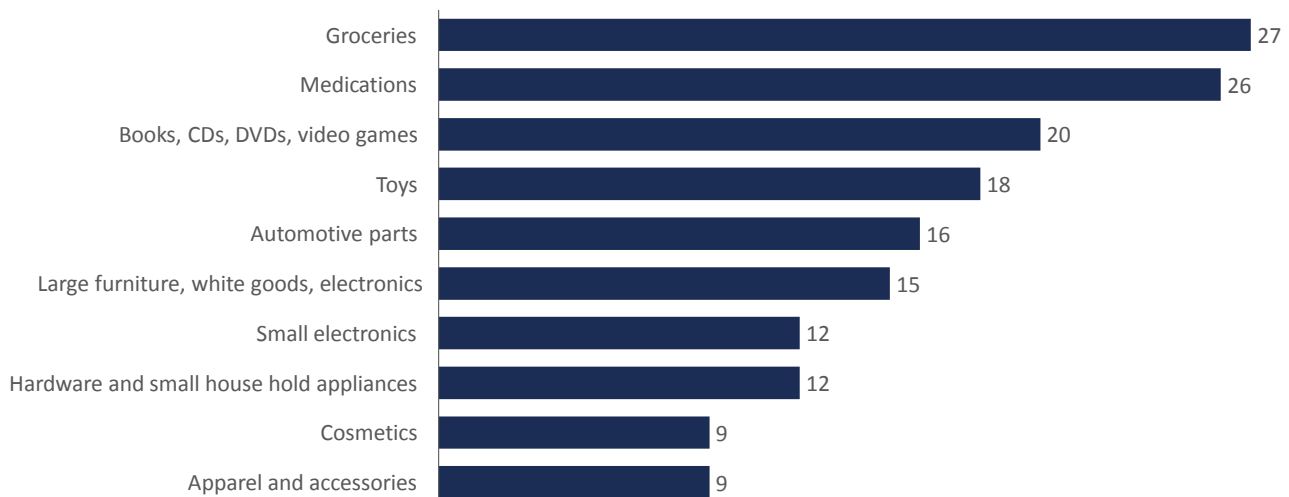
Many consumers say they do not buy online because delivery takes too long. In a recent survey, more than a quarter of respondents reported not buying groceries and medical items online because of delivery delays.²⁹ Delays also deter consumers from ordering online for small electronics, cosmetics and other items that could be delivered faster by drone.

EXHIBIT 9

Faster delivery could lead to more purchases, particularly for grocery and medical items

Share of respondents who did not purchase an item online due to long delivery times¹

Percent of respondents



¹ Survey of 4,700 consumers in China, Germany, and the US
Source: McKinsey (2016) Parcel delivery – the future of last mile

²⁹ McKinsey (2016) Parcel delivery – the future of last mile. Takeaway food did not feature in the report as it was focused on parcel delivery

Enabling more businesses to deliver

When a business can reach more customers, it can serve smaller customer groups that are not well served today. For example, an outstanding take-away restaurant that specialises in some regional cuisine could thrive when it can access a larger market. While the benefit is difficult to quantify, some ACT businesses will be able to cut costs and increase profits by scaling up to serve such niches.

As discussed earlier in this section, some ACT businesses may be unable to offer last-mile delivery due to the cost of delivery methods available today. This is less of a problem for larger brands that typically have access to lower-cost delivery due to their scale. Drones could be a convenient, affordable option for new local businesses to participate in last-mile delivery and engage in e-commerce. This would facilitate a more productive, competitive business environment in the ACT.



CASE STUDY:

Kickstart Espresso

Paul and Liat Davis opened Kickstart Espresso in 2014 with a mission: to serve quality coffee to busy parents like themselves who might otherwise struggle with the logistics of getting young children in and out of the car. The family now runs a cafe in Dickson and a busy drive-through outlet in Fyshwick, offering wholesome, country-style food and premium Toby's Estate coffee.

Drive-through coffee is 95% of Kickstart's Fyshwick business, with the Davis family serving up to 400 drive-through orders each day to a loyal, predominantly local customer base of parents with kids in the car, tradespeople, and workers from local business.

Kickstart plans to open new drive-through outlets in the coming months both in the Canberra region and Sydney's western suburbs and is also looking into a drone delivery service that could deliver coffee directly to its customers, whether they be at home, at work, or outdoors. "It's all about improving the distribution and making it more convenient for people," Paul Davis explains.

In a drone delivery trial with Wing, Kickstart has been delivering a limited menu of coffee and breakfast items to 150 potential customers in the Bonython region. It makes up to 40 deliveries in a three-hour session, averaging 6 to 8 minutes from order to delivery.



According to the Davis family, premium coffee needs to be delivered within a certain timeframe for it to retain optimum quality and taste. Coffee should reach a customer within 10 minutes of them placing an order, and within 4 minutes of it being poured, they say.

Kickstart briefly considered delivering coffee by road through more traditional distribution sources but didn't trust current delivery methods to reliably deliver within its delivery timeframe due to traffic, congestion and a range of other factors.

Drones are faster and more reliable. Travelling above the traffic at speeds of up to 120 km/h, they could deliver hot coffee from a single location to 6,000 households. To put this into perspective, Kickstart currently serves 250 to 400 drive-through customers each day. While not all 6,000 households will purchase Kickstart's coffee, drone delivery has the potential to increase sales by making it more accessible.

BENEFITS FOR CONSUMERS



Reaching underserved populations

Delivery drones could have a significant effect on disabled, elderly, or otherwise homebound people in the ACT. While delivery does not replace the need for more inclusive public spaces and services, drones could provide an additional way for homebound people to independently purchase items from the comfort and safety of their homes.

As of 2015, there were more than 13,000 disabled and 6,700 elderly people living in the ACT who needed assistance with mobility, according to statistics from the ABS.³⁰ Drone delivery could play a role in serving these populations and improving their quality of life.

Saving time

Drones travel faster than all other forms of last-mile delivery, at a top speed of around 120 km/h based on current small-drone technology. Drones are also not impacted by traffic and can thus deliver products much faster than other ground vehicles. As a result, drones could reduce delivery times for instant deliveries by around 60-70% in 2030.

Further, drone delivery can save people time by replacing 4-5 million customer pick-up journeys. As noted earlier, the last mile accounts for around 25% of the total cost of retail purchases when we factor in the time taken for customers to drive to the shops, make their transactions and bring their purchases home. By replacing customer pick-ups, drones could save ACT consumers 3 million hours in 2030. This is equivalent to \$70 million if valued at today's average earnings.³¹ Additionally, drone deliveries give consumers greater control of their deliveries. The traditional experience of ordering a product and being uncertain of its arrival time will be replaced with live tracking that is accurate to a matter of seconds.

Reducing delivery fees

Current delivery fees paid by consumers on instant and same-day delivery can be very high, ranging from \$5 for a food delivery to more than \$30 for a courier delivery.³² In many cases where delivery is not an option, such as a trip to the grocery store to pick up an extra onion, the time cost of picking up an item is also significant. Drones provide an option for consumers who want affordable instant or same-day delivery. Drones can be up to 80-90% less expensive than current methods of instant delivery. Even if only half of those savings are passed onto consumers, drones could save ACT households a total of \$5 million in delivery fees in 2030.³³ Using drones to reduce the cost of delivery can enable consumers to spend less on delivery and more on the products they want.

Expanding product variety

Drones can increase the variety and range of instant products available to consumers. Consumers in the ACT could access three to four times the number of retailers that are currently available to them. The potential increase in range and choice is most salient in the case of food delivery, where time is sensitive and current delivery ranges are restricted.

In Canberra, consumers can only order food to be delivered from a maximum of 5 km away.³⁴ This restricts the options available to them. For example, some consumers can currently only receive food from 30-50 restaurants.³⁵ Meanwhile, there are over 150 restaurants within a 10 km radius that offer delivery services. Doubling restaurants' delivery range can thus give consumers access to three times the number of restaurants currently available to them.

In addition to increasing the physical range of products currently available for delivery, consumers are likely to benefit from further product diversity. Drones are likely to encourage new retailers to engage in delivery services and enable existing retailers to further specialise their products.

³⁰ ABS (2016), *Disability, Ageing and Carers, Australia: Summary of Findings, 2015*

³¹ Average earnings per person of \$23 per hour based on \$34 average earnings for those employed in the ACT, adjusted for employment-to-adult-population ratio of 68%.

³² Uber Eats, Deliveroo and Australia Post (2018) pricing

³³ Assumes consumers receive a fee decrease that is proportional to the reduction in underlying costs

³⁴ Current range of 4-5 km based on the Uber Eats and Deliveroo delivery radius on the 8th of October (2018) in the ACT, estimated based on the furthest restaurant available to deliver to Yarralumla.

³⁵ Restaurant count based on the number of restaurants available on Uber Eats and Deliveroo, accessed from Yarralumla on 8 October 2018. Potential increase in restaurants based on the number of restaurants and cafes currently delivering within a 10km radius of Yarralumla.

BENEFITS FOR SOCIETY

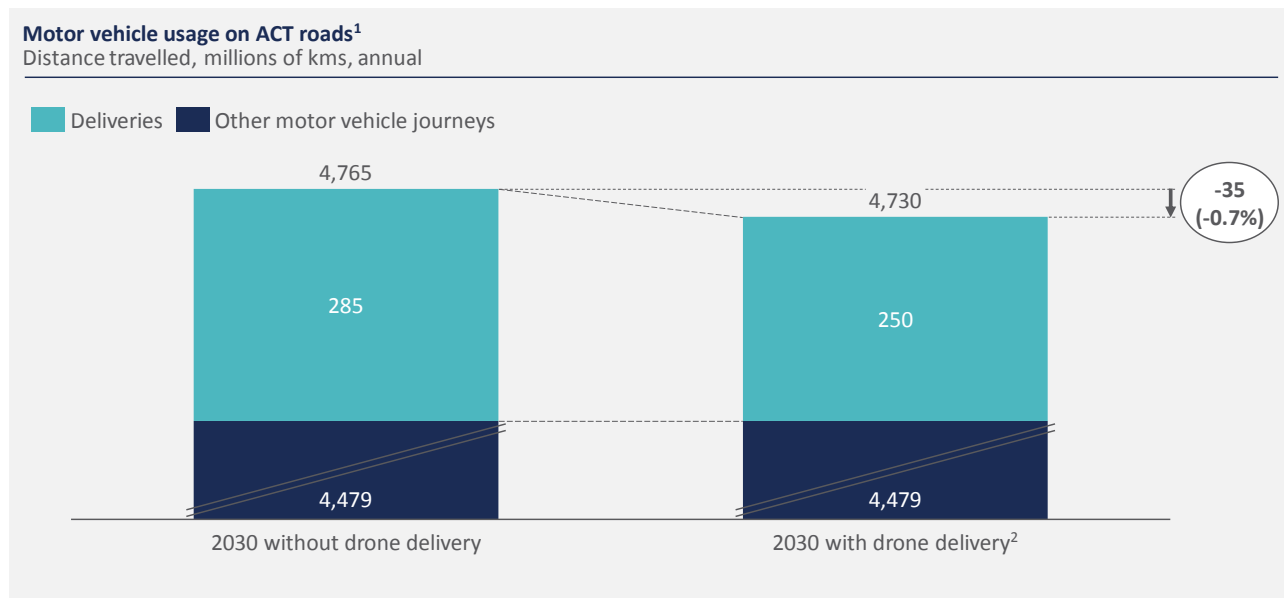


Reducing congestion

By reducing 35 million kilometres of delivery-related road travel, drones have the potential to reduce ACT road congestion. By 2030, it is estimated that delivery vehicles could be responsible for 6% of the kilometres travelled on ACT roads. Delivery vehicles are large, heavy and can disproportionately disrupt other road users. Parking and access to loading areas often delay and inconvenience other commuters and pedestrians. Delivery-related congestion in high-density areas has only increased in the era of ride-sharing and food delivery. By delivering up to 4-6% of transactions, drones could materially reduce the number of unnecessary vehicles on the road, reducing congestion and the associated greenhouse gas emissions.

EXHIBIT 10

Drone delivery could reduce vehicle road travel in the ACT by 35 million kilometers in 2030



¹ 2030 forecasts project 2017 results at 1.6% CAGR using historical CAGR on distance travelled by motor vehicles from 2010-16

² Does not include drone deliveries that replace bike deliveries

SOURCE: ABS Survey of Motor Vehicle Use (2016), ABS Retail Trade (2017), ACT Treasury, AlphaBeta analysis



Reducing emissions

There is an urgent need for countries to lower their greenhouse gas emissions, which, if left at current levels, could have devastating effects on the world. The United Nations' Intergovernmental Panel on Climate Change has warned that several hundred million more people could face climate-related risks and poverty unless annual carbon emissions are halved by 2030.³⁶

The ACT emits 1.7 million tonnes of greenhouse gas each year, or 4 tonnes per capita.³⁷ While overall emissions are relatively low relative to Australia as a whole (due to the lack of heavy industry), a high share (69%) of the ACT's emissions are derived from road transportation, versus 16% nationally. In particular, cars account for 44% of the ACT's emissions, versus only 8.3% nationally. This share is second only to Tasmania, and suggests that drones

can play a significant role in reducing the ACT's emissions by replacing car journeys.

Drones are more environmentally friendly than today's transportation methods – which in the ACT, consist primarily of motor vehicle trips. A 2018 study (results shown in Exhibit 11) found that small drones cause the emission of 25 grams of greenhouse gas per last-mile delivery, versus 296-728 grams for delivery trucks or vans, after accounting for the economies of scale that these trucks can achieve by delivering multiple packages along their route. Personal pick-ups via car – which account for about 75% of transactions in the ACT in 2030 – are the worst polluters, emitting an average of 4,600 grams of greenhouse gas per trip.³⁸

By using drones to fulfil 4-6% of its deliveries, the ACT could lower its greenhouse gas emissions by about 8,000 tonnes or the equivalent of carbon storage of almost 250,000 trees in 2030.³⁹

³⁶ IPCC (2018), *Global Warming of 1.5°C*

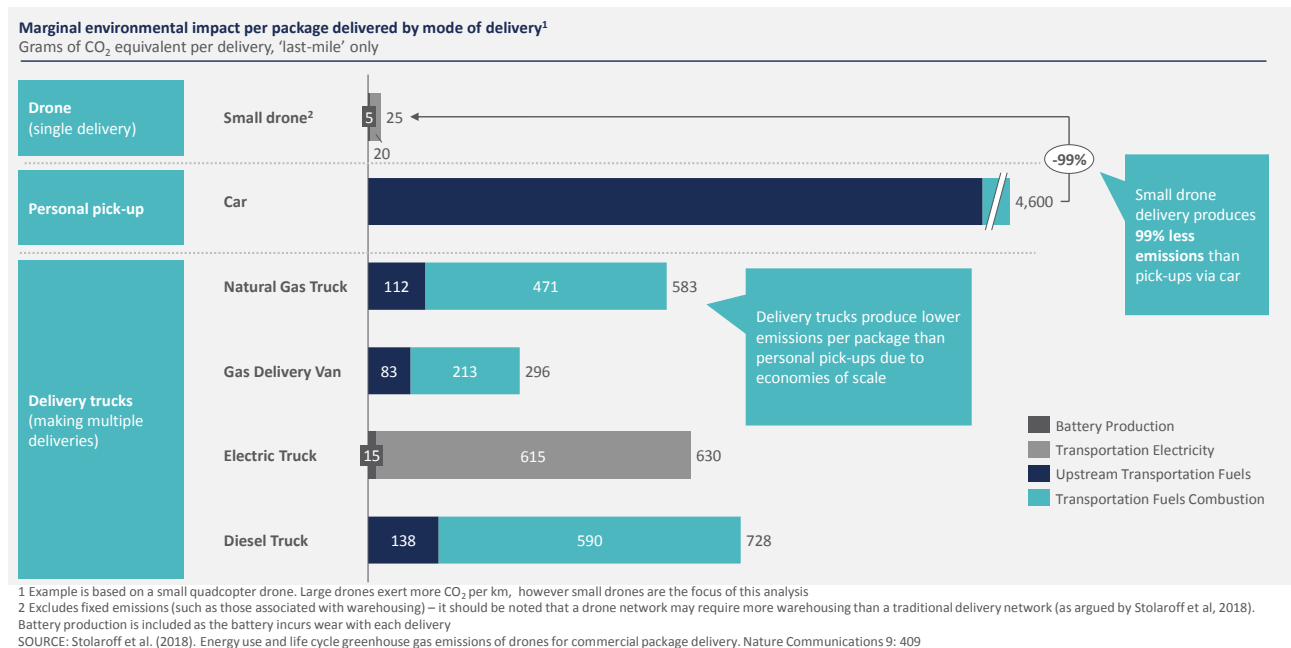
³⁷ 2016 data, obtained from the Department of the Environment and Energy's National Greenhouse Gas Inventory

³⁸ While a shift to renewable energy would reduce these costs, it would also reduce emissions from drones. Modelling of carbon emissions per delivery obtained from Stolaroff et al. (2018), "Energy use and life cycle greenhouse gas emissions of drones for commercial package delivery", *Nature Communications* 9: 409. The estimates used in this paper exclude the fixed warehousing component (we consider the marginal emissions per vehicle trip only). The authors argue that a drone network requires more warehousing than other delivery modes.

³⁹ Greenhouse gas to carbon storage using EPA equivalency calculator (2018). Available at: <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>, Assumes 20-30 trees per acre.

EXHIBIT 11

Drones create ~99% lower emissions than deliveries by car and are cleaner than other delivery options



Reducing road accidents

There are almost 8,000 motor vehicle accidents a year on ACT roads.⁴⁰ Replacing 35 million vehicle-kilometres of road-based deliveries and pick-ups could result in 70 fewer accidents, including a small number that injure or kill native animals. Fortunately, ACT roads are relatively safe and have the nation's lowest road fatality rate.⁴¹ Despite this, the potential injuries, time, inconvenience and economic cost of vehicle accidents is significant and should not be neglected.

⁴⁰ ACT Government (2016) ACT Road Crash Report

⁴¹ BITRE (2016), Road Trauma Australia

APPENDIX – Detailed methodology

Constructing a scenario for the future role of drone delivery

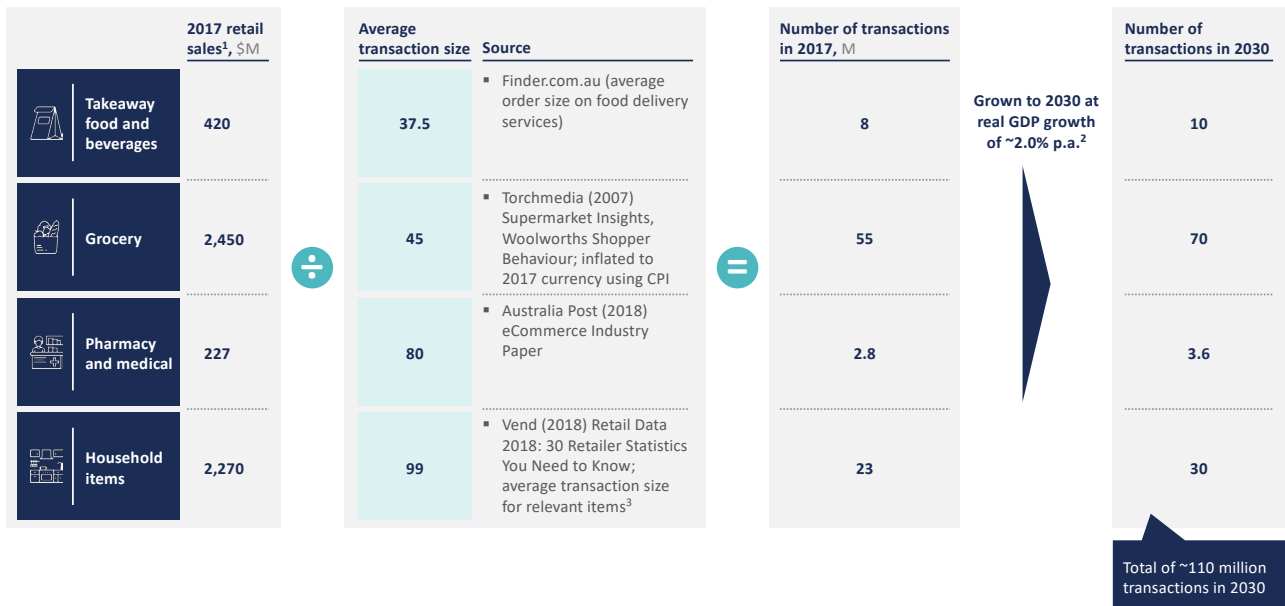
The first step in estimating the benefits of drone delivery is understanding the number and types of deliveries that might be undertaken by drones in 2030. This was done by sizing last-mile delivery in 2017, growing it to 2030, and dividing it up into transactions of different characteristics based on a range of assumptions and data inputs. These transactions were further broken into those which are delivered today (versus picked up by customers), how that might change by 2030. Assumptions were then made about the potential uptake of drones in 2030.

Sizing the last-mile delivery sector

The first step in sizing last mile delivery was understanding the number of transactions today and how those might grow by 2030. For each retail category (see Exhibit 12), we began with total retail sales for the ACT from the Australian Bureau of Statistics. To obtain the number of transactions, the average order value for each retail category was applied. The number of transactions was then grown to 2030 volumes using a real GDP growth rate forecast.

EXHIBIT 12

Estimating the number of transactions in 2030



NOTE: Rows and columns may not sum to totals due to rounding

¹ From ABS Retail Trade (2017)

² Moderated down slightly from the average real GDP growth in the ACT since 2009 of 3.0% p.a. to be conservative and to reflect the rising share of services in Australia's economy. Data from ABS State Accounts (2016-17)

The number of transactions was then divided across three axes:





- Distance between merchant and customer
- Time sensitivity of the purchase (how quickly the item is required, i.e. instant, same day or standard)
- Size distribution of the transactions

The assumptions and inputs used to disaggregate the transactions are given in Exhibit 13.

EXHIBIT 13

Distance, time sensitivity and size assumptions for transactions

Distance assumptions		Required delivery timeframe assumptions (% of households)			
Distance from outlet	% of households	Product category	Instant	Same day	Standard
<1KM	10%	Takeaway food & beverages	100%	N/A	N/A
1-5KM	60%	Grocery	20%	60%	20%
5-10KM	25%	Pharmacy and medical	33%	33%	33%
10+KM	5%	Household items ¹	2%	20%	78%





Size distribution of transactions			Notes
	Takeaway food and beverages	Small (<2.5kg) 85%	■ 2.5kg payload assumed to capture 80-90% of today's food delivery
		Medium (2.5-6kg) 10%	
		Large (>6kg) 5%	
	Total	100%	
	Grocery	Small (<2.5kg) 40%	■ 2.5 supermarket visits per week (from Torchmedia, 2007) – assume one is weekly shop and other 1.5 are top-ups (distributed evenly between small and medium) ■ Convenience stores included in this category, and have smaller purchase sizes, so share of small transactions increased slightly to 40%
		Medium (2.5-6kg) 30%	
		Large (>6kg) 30%	
	Total	100%	
	Pharmacy and medical	Small (<2.5kg) 80%	■ 80% of items assumed to be small
		Medium (2.5-6kg) 15%	
		Large (>6kg) 5%	
	Total	100%	
	Household items	Small (<2.5kg) 45%	■ Based on distribution of transactions between different subcategories within household items (e.g. furniture, electrical, hardware, etc.), and the share of each that is likely to be heavy, medium or light
		Medium (2.5-6kg) 45%	
		Large (>6kg) 10%	
	Total	100%	

¹ Shares from McKinsey (2016) Parcel delivery – The future of last mile
SOURCE: ABS Retail Trade (2018), Torchmedia (2007) Supermarket Insights, interviews with Wing, Google maps analysis

Once estimates were obtained for the number and types of transactions, it was necessary to break these down further into those that are delivered versus those that are picked up. For this we used a range of external inputs, as shown in Exhibit 14.

EXHIBIT 14

Estimating the share of transactions that are delivered

	2017	2030
 Takeaway food and beverages	19% Average Australian online takeaway delivery market shares from finder.com.au and Morgan Stanley, expressed as share of total takeaway sales in Australia	40-50% Existing growth and market estimates of online takeaway and delivery (Morgan Stanley 2018)
 Grocery	3% Share of transactions that are delivered (from Woolworths 2018 Annual Report)	25-35% Engagement is industry sector experts. Market estimate and historic growth (Bankwest 2018). Delivery market estimate using predicted growth (Nielson 2018, Woolworths 2018, Livewire 2018)
 Pharmacy and medical	2% Ratio of online to total pharmacy sales in Australia (both obtained from IBIS world)	20-30% Current market and anticipated growth (ABS 2017, Pharmafile 2016). Estimated delivery and growth (Australia Post 2018)
 Household items	8% E-commerce as a share of total retail in Australia, obtained from Australia Post (2018) E-commerce Industry Paper	25-35% Current market and historic growth (Australia Post 2018). Current online sales and expected growth (Australia Post 2018, UBS 2018)

The resulting dataset is a rich breakdown of transactions – for both today and 2030 – by weight, distance, time-sensitivity, and current mode (delivery versus pickup). That is, for each cell in



the matrix in Exhibit 15, we know the number of transactions that are delivered versus picked up (and an educated guess of what this might be in 2030).

EXHIBIT 15

A dataset was constructed that provides a detailed breakdown of current and future retail transactions

Number of transactions by type

#

Weight 	Distance 	Required delivery timeframe		
		Instant delivery	Same day	Standard
<2.5kg	<1km			
	1-5km			
	5-10km			
	10km+			
>2.5kg	<1km			
	1-5km			
	5-10km			
	10km+			

For each cell, the dataset contains the number of transactions, split by:

- Retail product category
- Whether the transactions are delivered or picked up by the customer

These figures are estimated both 2017 and for 2030 based on a range of data sources and assumptions

SOURCE: AlphaBeta analysis

Establishing a reasonable scenario for drone uptake

For each cell in Exhibit 15, it was necessary to form a view on the potential uptake of drone delivery by 2030. Educated assumptions were made about the share of current deliveries and pickups that could be migrated to drone delivery.

Different assumptions were made for each retail

category to reflect their different suitability for drone delivery (for example, uptake is assumed to be higher for takeaway given it is currently the primary use case for drone delivery in the Wing ACT trials).



The result of these assumptions is provided in Exhibit 16. Note that the assumptions were made at a more detailed level and aggregated to this level for presentation.

EXHIBIT 16

Assumptions were made about the potential uptake of drone delivery for the relevant transaction types

Assumed share of transactions delivered by drone in 2030

%

Weight 	Distance 	Required delivery timeframe		
		Instant delivery	Same day	Standard
<2.5kg	<1km	10-15%	4-6%	
	1-5km	30-35%	8-12%	
	5-10km	24-28%	8-12%	
	10km+			
>2.5kg	<1km			
	1-5km			
	5-10km			
	10km+			

Factors influencing the share of deliveries undertaken by drone include:

- **Distance:** Very close transactions are less likely to be delivered due to ease of pickup
- **Time sensitivity:** Drone uptake is higher for instant transactions due to the higher speed and lower cost of drones versus other methods of instant delivery
- **Mix of current delivery modes:** Delivered transactions are more likely to be replaced by drone than pickups as the latter requires a bigger behaviour change from consumers

SOURCE: AlphaBeta analysis

Estimating the change in delivery costs

Estimating the cost of current and future delivery modes

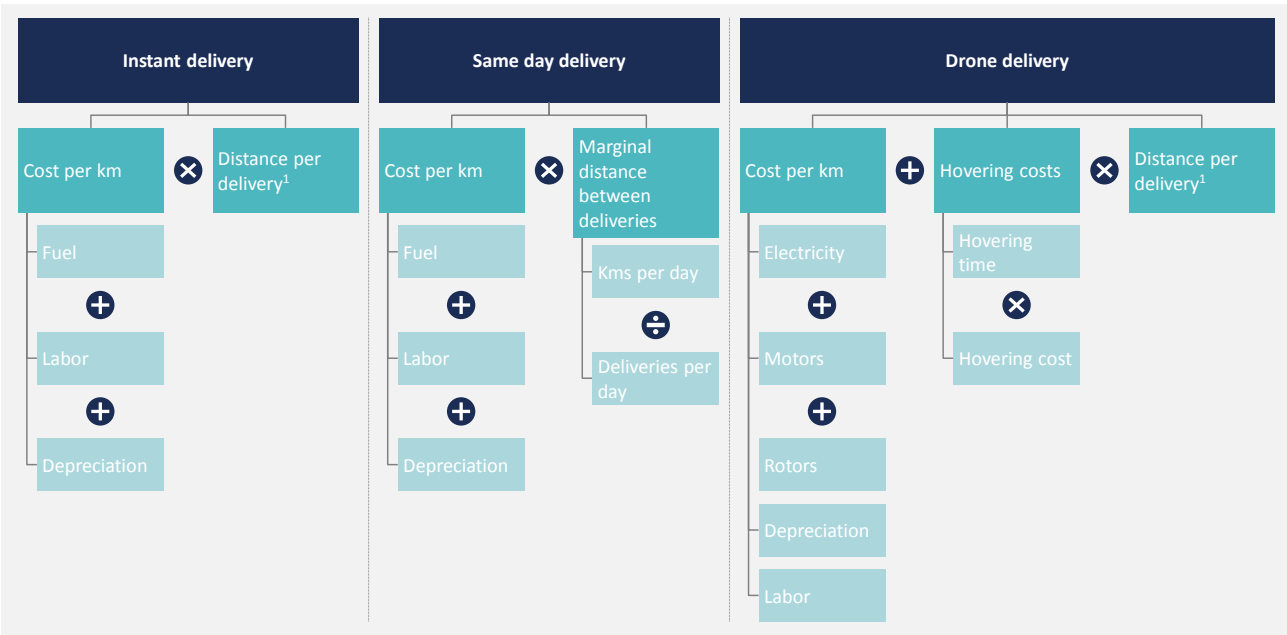
Delivery costs of vans, cars, bikes and drones were considered in this report and defined as the marginal cost related to the transportation of products. For current modes of delivery, this

includes labour, depreciation and fuel expenses. For drone delivery, a bottom up view of drone costs was estimated to consider component costs such as the motor, rotor, batteries, labour and electricity (see

Exhibit 17). The marginal delivery cost was calculated for all four modes across each distance category and three delivery periods (instant, same day and next day). AlphaBeta's cost saving estimates are consistent with other external views (see Exhibit 18).

EXHIBIT 17

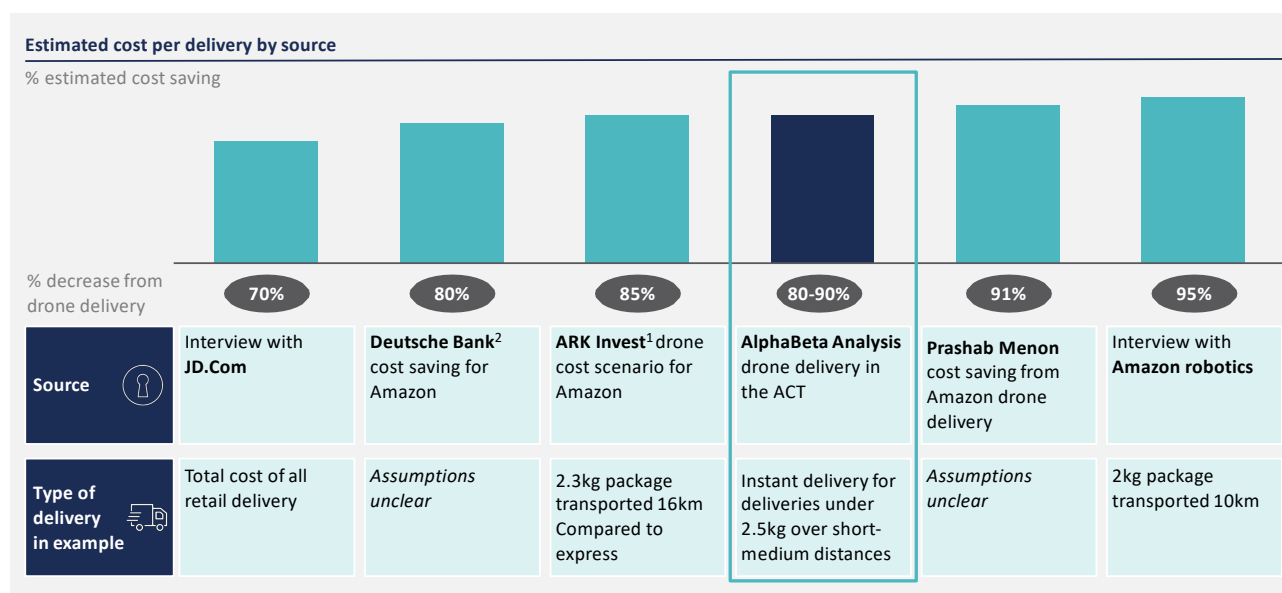
Estimating the cost of instant, same day and drone delivery



Distances were calculated for each distance category: <1km, 1-5km, 5-10km.
1. Estimated delivery distance equal to return of each distance category.

EXHIBIT 18

The estimated drone cost savings are consistent with external views



NOTE: Cost saving estimates have been collected from desktop research. Assumptions are not always clear and vary by source of analysis. 1

Labour costs are a high share of potential drone delivery costs, 60%

2 Cost saving from a combination of delivery automation, drones and robots

SOURCE: Desktop research, ARK Invest, Business Insider, University of California Berkeley, Ivey Business Review

Estimating the cost of instant delivery

Cost modelling for instant delivery used a different method to same-day and next-day delivery. Instant delivery calculations assumed that food delivery and private couriers only deliver one parcel at a time. These deliveries are often point to point and the estimated marginal cost is the distance between the point of origin and destination. Thus, the distance travelled per delivery is similar to drones, making the cost comparison straightforward. To account for road design and traffic, a discounted average delivery speed was assumed for current methods of delivery. Assumptions related to speed, distance and route activities were tested with industry experts. The high-cost nature of point-to-point delivery meant that instant delivery costs were significantly higher than same-day and next-day deliveries. This is consistent with market price estimates from Uber Eats, Zoom2u and Australia Post.

Estimating the cost of same-day and standard delivery

To ensure an accurate cost comparison with drone delivery, same-day and next-day delivery cost calculations considered economies of scale and optimised delivery routes. Modes that use route delivery have a different marginal cost structure to instant, point-to-point deliveries, where the marginal cost per delivery is the cost between the previous drop and the next drop, as opposed to the cost from point of origin to point of destination.

Given the scale and efficiency of the standard parcel delivery sector, conservative assumptions were made to factor in high economies of scale. This was done by varying the marginal distance per delivery across each different distance length. The further the delivery destination was from the point of origin (i.e. shop or parcel depot), the greater the additional distance per parcel.

Table 1: Inputs and sources for calculating current delivery costs

Area	Metric	Source
Marginal cost of delivery	Fuel costs	<ul style="list-style-type: none"> Australian petrol prices (2018) Carsales: Mercedes Sprinter and Toyota Corolla (2016)
	Labour costs	<ul style="list-style-type: none"> Stats Monkey (2014)
	Labour (pick up) costs	<ul style="list-style-type: none"> ABS (2018) Average hourly national wage
	Depreciation costs	<ul style="list-style-type: none"> Carsales: Mercedes Sprinter and Toyota Corolla (2016) ATO (2018) Depreciation of vehicles
	Trip speed	<ul style="list-style-type: none"> Industry expert interviews
Distance of marginal trip	Distance travelled per trip by vehicle	<ul style="list-style-type: none"> Roy Morgan (2013) Australian motorists drive an average 15,530km per year Industry expert interviews
	Parcels delivered per day	<ul style="list-style-type: none"> AlphaBeta analysis Industry expert interviews

Estimating the cost of drone delivery

The novel nature of drone delivery has made it relatively difficult to determine potential costs. To solve for the dearth of available information, drone costs referenced in this report represent a bottom

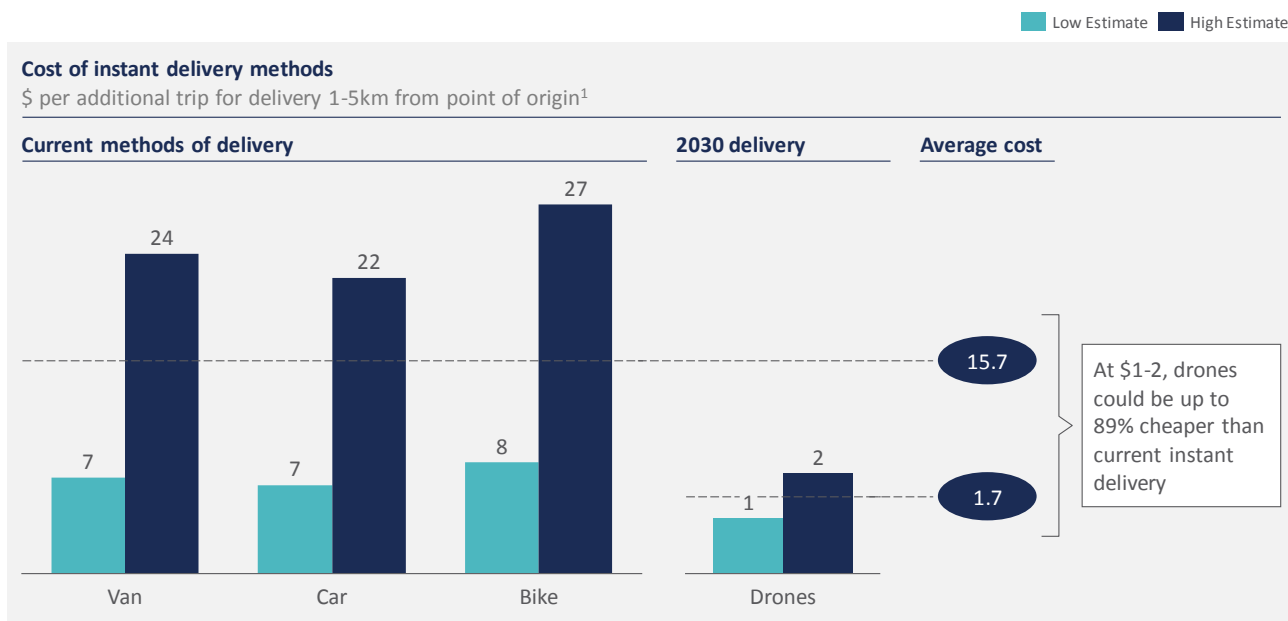
up approximation of the individual components of a drone. To ensure the potential of drones is realistic, conservative estimates of package load, range speed and overall cost were used to calculate the potential marginal cost of drone delivery across different distances.

Table 2: Inputs and sources for calculating drone delivery costs

Area	Metric	Source
Marginal cost of delivery	Electricity and battery costs	<ul style="list-style-type: none"> Jenkins et.al (2017) Forecast of commercial UAS package delivery market Industry expert interviews
	Motor costs	
	Rotor costs	
	Depreciation costs	
	Labour costs	<ul style="list-style-type: none"> Indeed (2018). Average salary of commercial pilot
Operating trip assumptions	Hovering time	<ul style="list-style-type: none"> Jenkins et.al (2017) Forecast of commercial UAS package delivery market Industry expert interviews
	Speed	
	Flight time	
	Trips per day	

EXHIBIT 19

At \$1-2 per trip, drones could be 89% cheaper than current instant delivery

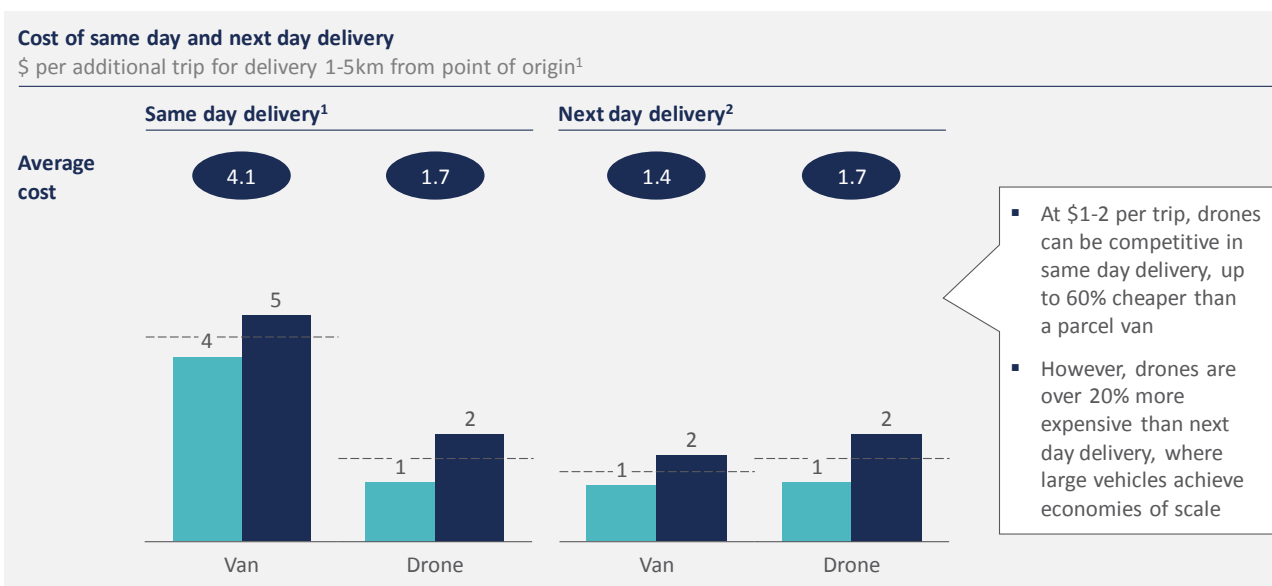


¹ Assumes an instant delivery return trip of 3-10 km

SOURCE: AlphaBeta analysis

EXHIBIT 20

Drones become less affordable when competing with large vehicles that gain economies of scale from delivering multiple parcels



¹ Assumes additional delivery distance on existing route is 0.9-1.1 km per delivery

² Assumes additional delivery distance on existing route is 0.4-0.6 km per delivery

SOURCE: AlphaBeta analysis

Estimating benefits for local businesses

Reducing delivery costs

Using the cost estimation derived earlier for drones versus current modes of delivery, the potential reduction in delivery costs to businesses was estimated as shown in Exhibit 21.

EXHIBIT 21

Calculating the reduction in last-mile delivery costs for ACT businesses

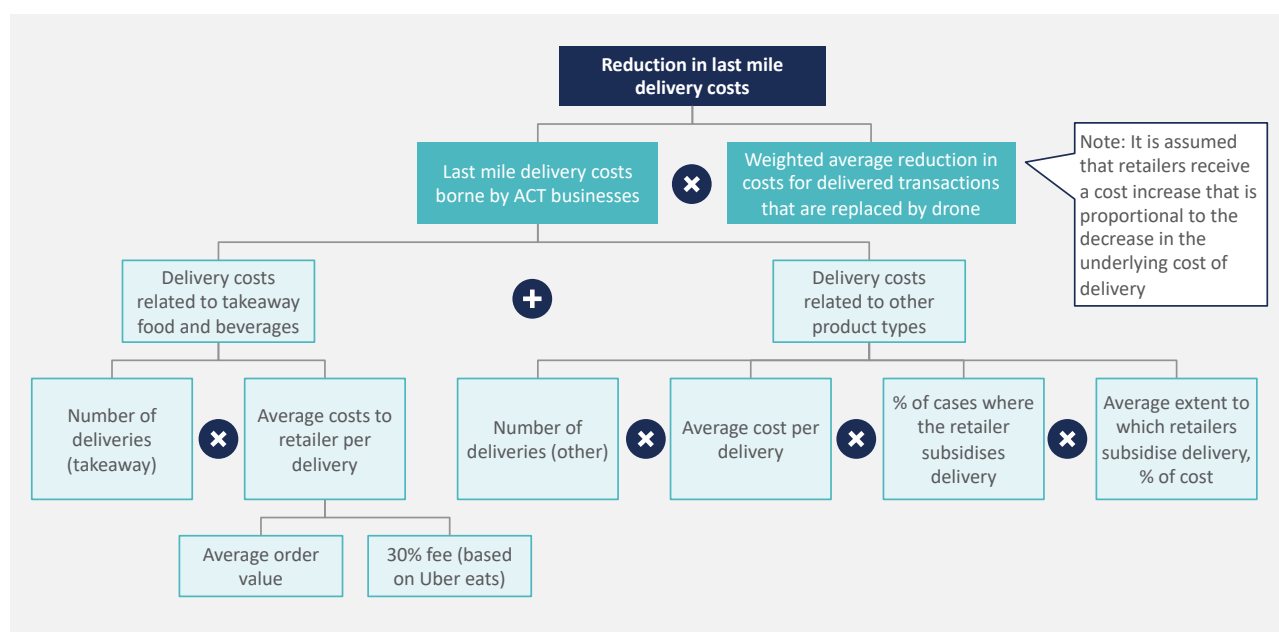


Table 3: Inputs and sources for calculating reduction in delivery costs

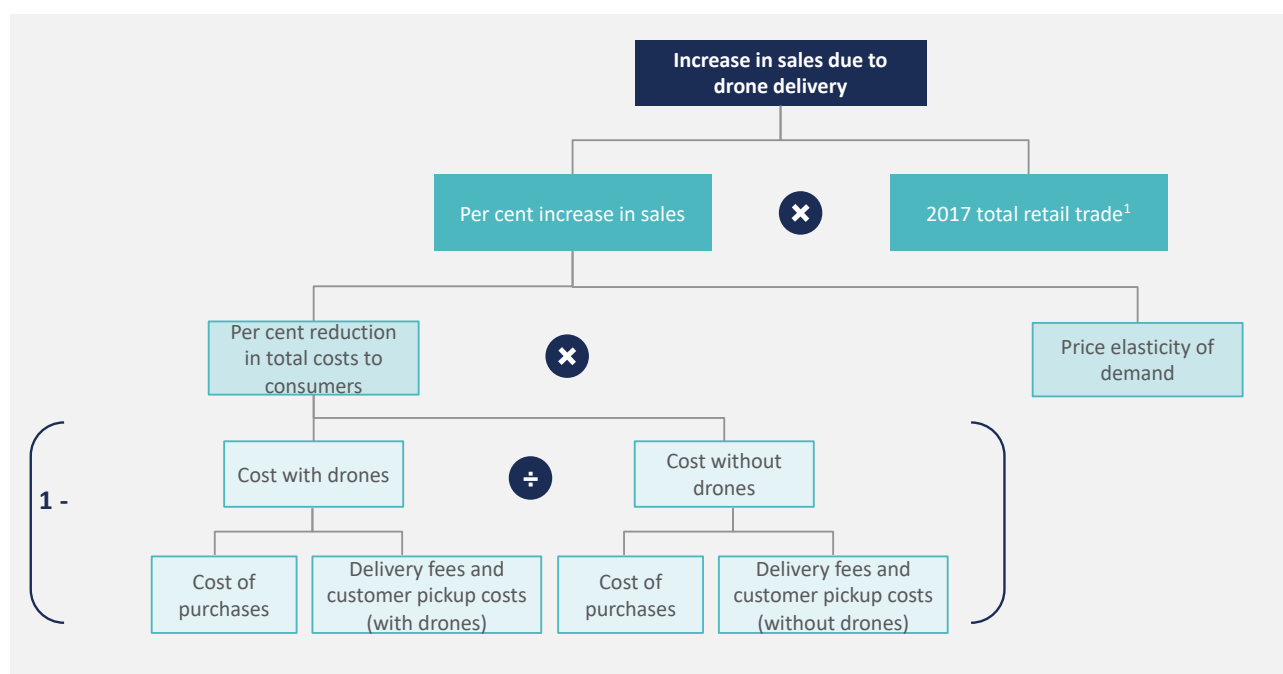
Area	Metric	Source
Weighted average reduction in costs for delivered transactions that are replaced by drone	Weighted average cost reduction (%)	<ul style="list-style-type: none"> Estimated using the results obtained in earlier sections of this appendix (cost of drones, cost of current methods of delivery and current mix of transaction types)
Last mile delivery costs borne by ACT consumers	Number of deliveries (takeaway)	<ul style="list-style-type: none"> Obtained from earlier analysis (sizing the last mile sector in 2030)
	Number of deliveries (other)	<ul style="list-style-type: none"> As above, but for non-takeaway transactions
	Average cost per delivery	<ul style="list-style-type: none"> Obtained from earlier analysis of the cost of delivery for each mode of transport, combined with the current mix of transaction types
	% of cases where the retailer subsidises delivery, and amount of subsidisation	<ul style="list-style-type: none"> Analysis of mystery shopping data presented in Copenhagen Economics (2016), Principles of e-commerce delivery prices

Generating more sales

Reducing costs to consumers (via lower delivery fees and pick-up travel costs) has the potential to generate more transactions in the ACT that would otherwise not have occurred. This effect was estimated as in Exhibit 22.

EXHIBIT 22

Calculating the increase in total ACT sales due to less expensive and more convenient delivery



¹ Includes takeaway but excludes meals consumed at restaurants

Table 4: Inputs and sources for calculating the increase in sales

Area	Metric	Source
2017 total retail trade	Total retail trade in the ACT in 2017 (\$M)	<ul style="list-style-type: none"> ■ ABS Retail Trade (2018)
Per cent increase in sales	Cost of purchases	<ul style="list-style-type: none"> ■ ABS Retail Trade (2018)
	Delivery fees and customer pickup costs with drones	<ul style="list-style-type: none"> ■ Obtained from earlier analysis (see “Estimating the change in delivery costs” in this appendix)
	Delivery fees and customer pickup costs without drones	<ul style="list-style-type: none"> ■ Obtained from earlier analysis (see “Estimating the change in delivery costs” in this appendix)
	Price elasticity of demand	<ul style="list-style-type: none"> ■ Elasticity of 0.7, based on: <ul style="list-style-type: none"> - Supermarkets elasticity of 0.6, obtained from Andreyeva (2010) The Impact of Food Prices on Consumption: A Systematic Review of Research on the Price Elasticity of Demand for Food. American Journal of Public Health (AJPH) - Adjusted upwards slightly to reflect other product categories (takeaway and household items) that are likely to be more price-elastic than groceries <p>This elasticity was considered conservative, because we do not measure the intangible value placed on increased convenience and greater choice, which would also have a positive impact on transaction activity.</p>

Expanding market reach

A key benefit of drones for both retailers and consumers is the expansion of delivery range. To quantify this benefit, this report investigated how an increase in delivery range could impact ACT retailers and consumers.

To understand the retailer benefit, one Canberra

central restaurant was selected, and its current delivery range was observed using online food delivery websites. This analysis indicated that the average maximum distance of food delivery was approximately 5 km. Using ABS data, it was possible to estimate the number of households within the current delivery radius and the potential increase if the delivery radius was expanded to 10 km.

Table 5: Inputs and sources for calculating expansion of market reach

Area	Metric	Source
Households available in delivery range for a Canberra central restaurant	Current range of restaurant delivery	<ul style="list-style-type: none"> ■ Delivery radius of Uber Eats and Deliveroo for a specific restaurant (2018)
	Number of current and potential households in range	<ul style="list-style-type: none"> ■ Census population in relevant SA3 locations, ABS Census (2016)

Estimating benefits for consumers

Reducing delivery fees

The potential reduction in delivery fees to consumers was estimated using the approach shown in Exhibit 23.

EXHIBIT 23

Calculating the reduction in last mile delivery fees for consumers

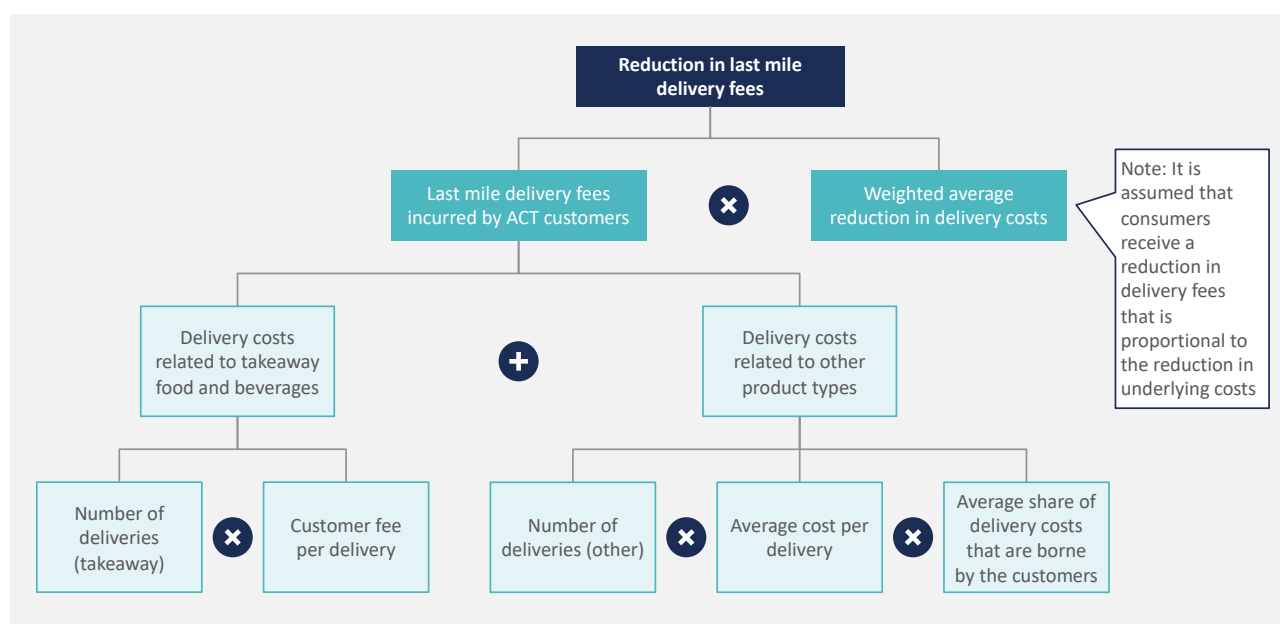


Table 6: Inputs and sources for calculating consumer delivery fee savings

Area	Metric	Source
Weighted average reduction in costs for delivered transactions that are replaced by drone	Weighted average cost reduction (%)	<ul style="list-style-type: none"> Estimated using the results obtained in earlier sections of this appendix (cost of drones, cost of current methods of delivery and current mix of transaction types)
Last mile delivery costs borne by ACT consumers	Number of deliveries (takeaway)	<ul style="list-style-type: none"> Obtained from earlier analysis (sizing the last mile sector in 2030)
	Number of deliveries (other)	<ul style="list-style-type: none"> As above, but for non-takeaway transactions
	Average cost per delivery	<ul style="list-style-type: none"> Obtained from earlier analysis of the cost of delivery for each mode of transport, combined with the current mix of transaction types
	% of cases where the retailer subsidises delivery	<ul style="list-style-type: none"> Analysis of mystery shopping data presented in Copenhagen Economics (2016), Principles of e-commerce delivery prices
	Average share of delivery costs that are borne by the customer (% of cost)	<ul style="list-style-type: none"> Analysis of mystery shopping data presented in Copenhagen Economics (2016), Principles of e-commerce delivery prices

Saving time

The potential reduction in delivery fees to consumers was estimated using the approach shown in Exhibit 23.

Estimating delivery times for each mode of transportation

This paper estimated and compared delivery times

across delivery modes (van, car, bike, drone) and periods (instant, same day and next day). This analysis focused on last-mile instant delivery. Delivery distances were matched to four typical categories (less than 1 km, between 1-5 km, between 5-10 km, and over 10 km). The speed assumptions necessary to calculate time taken per delivery were estimated for each mode of delivery using research and industry expert interviews.

Table 7: Inputs and sources for calculating delivery times

Area	Metric	Source
Current vehicle speeds	Average speed of instant delivery	<ul style="list-style-type: none"> Industry expert interview AlphaBeta analysis
	Average speed of same day delivery	<ul style="list-style-type: none"> Australia Post, Zoom2u, Coles, Local flower delivery (2018) Industry expert interview
Drone delivery speeds	Average speed of trip by deliver distance	<ul style="list-style-type: none"> Industry expert interview AlphaBeta analysis

Estimating the reduction in delivery times for consumers

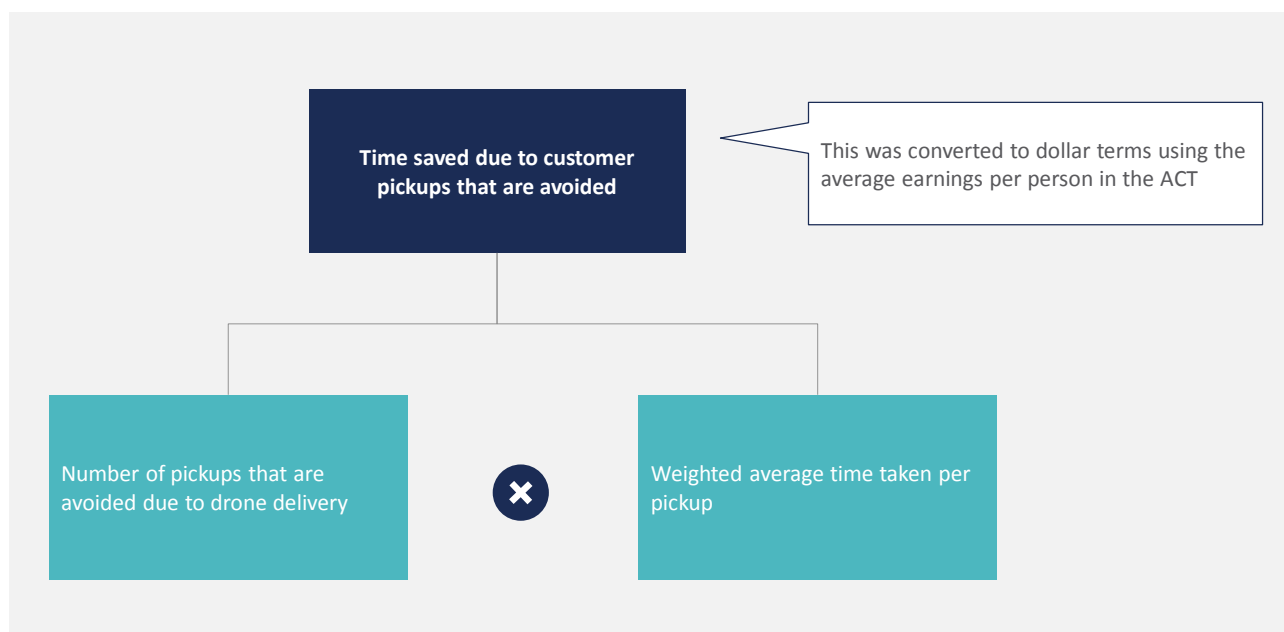
The reduction in delivery times was calculated as the weighted average difference in delivery times between drones and current delivery modes for relevant transaction types (see above for sources). For example, for instant deliveries (which are currently delivered using ground transportation, e.g. by Uber Eats), the weighted average delivery time reduction is 60-70%.

Estimating the time savings due to replacing customer pick-ups

The time saved by replacing customer pick-up journeys was estimated using the approach shown in Exhibit 24.

EXHIBIT 24

Calculating time saved due to pickups that are avoided due to drone delivery



Expanding product variety

See earlier section on “Expanding market reach”. A similar method was used to estimate the potential range expansion benefits to consumers. This involved selecting a test delivery destination and observing the furthest restaurants available for delivery. Yarralumla was selected as the test location due to it currently being well serviced by food delivery. The maximum average delivery distance was also 5 km. Using online food delivery websites, it was possible to map restaurants that offer delivery in Canberra and observe the number within 5 km and 10 km of Yarralumula. The difference indicated the potential expansion in food delivery choice available to consumers.

Table 8: Inputs and sources for calculating expansion in product delivery

Area	Metric	Source
Restaurants available for a consumer	Current range of restaurant delivery	▪ Delivery radius of Uber Eats and Deliveroo for a specific address in Yarralumla (2018)
	Number of current and potential restaurants in range	▪ Delivery radius of Uber Eats and Deliveroo from a specific restaurant (2018)

Estimating benefits for society

Societal benefits encompass a broad range of benefits, including some indicators that are difficult to measure or attribute directly to drone delivery such as lives saved by emergency medical delivery and boosts in innovation. As such, this report estimates the environmental and safety benefits from drone delivery that directly result from having fewer motor vehicles on the road. While other benefits are often not conducive to comprehensive quantitative measurement, they are important contributions to the ACT that can be observed and described.

Emissions reduction from drone delivery

The potential emissions reduction from drone delivery is the difference between the emissions avoided by reducing the number of motor vehicles on the road and the additional emissions produced by drones. Emissions avoided was estimated by calculating the total last-mile distance travelled by motor vehicles that would be replaced by drone delivery, multiplied by the emissions per km by vehicle type (namely cars and light commercial vehicles). Additional emissions produced by drones was estimated in the same way, by using the rate of emissions per trip from drone delivery. The average emissions per trip for drone delivery versus other methods were modelled by Stolaroff et al. (2018).

Accidents avoided from drone delivery

The potential number of accidents avoided by drone delivery as a result of fewer vehicles on roads is calculated by using the current rate of accidents per km multiplied by the reduction in distance travelled by road vehicles including bicycles. This estimate is likely to be conservative as road accidents and crashes have proven to be underreported in official data.

Table 9: Inputs and sources for calculating societal benefits

Area	Metric	Source
Emissions reduction from drone delivery	Total emissions from motor vehicles by vehicle type	▪ Department of Environment and Energy
	Total distance travelled by motor vehicles by vehicle type	▪ ABS Survey of Motor Vehicle Use (2016)
	Emissions per trip for drone delivery and other methods	▪ Stolaroff et al. (2018) Energy use and life cycle greenhouse gas emissions of drones for commercial package delivery
Road accidents prevented from drone delivery	Total number of road crashes	▪ ACT Government (2016) Road Crash Report
	Total distance travelled by vehicle type	▪ ABS Survey of Motor Vehicle Use (2016)
Road vehicles avoided from drone delivery in distance travelled	Primary mode of transport for delivery and pick-up by consumer type (distance from retailer, package size, timeliness of delivery)	▪ AlphaBeta analysis ▪ Industry expert interviews
	Average distance travelled per trip by consumer and vehicle type	▪ AlphaBeta analysis ▪ Google maps (2018) ▪ Refer to cost of delivery analysis in this appendix
	Average number of trips replaced by drone delivery by consumer type	▪ ABS Retail Trade (2017) ▪ ACT Treasury
	Compound annual growth rate of motor vehicle kilometres travelled	▪ ABS Survey of Motor Vehicle Use (2010-2016)

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LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 13

Date Authorised for Publication: 7 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Inquiry into drone delivery system in the ACT
Date: Thursday, 24 January 2019 12:06:10 PM

To: The Standing Committee on Economic Development and Tourism

Name: [REDACTED]

Postal address: [REDACTED]

Ph: [REDACTED]

I write regarding the inquiry into drone delivery systems in the ACT. I have witnessed the noise generated from the flyover drones at a domestic residence in Bonython, where my uncle resides. The volume generated by a single drone flying over their house is exceptionally loud, and has been measured at up to 80 decibels! My family experiences up to 20 such flyovers in the space of a few hours when deliveries are being made to their neighbouring properties. It interrupts the peace; it interrupts with outdoor entertaining; and it impacts their activities – such as being able to watch television or listen to the radio, etc. It is, quite simply, a public nuisance.

A major concern I have is that the noise generated or resulting from the drone deliveries is entirely unregulated. There are no regulations or limitations in place to control or mitigate the noise generated by the drones, or the frequency of deliveries to an address. The commercial operators of these proposed delivery businesses have no obligation to consider the health and amenity of the neighbours and public affected by their operations. This is unacceptable, and has many of us in fear as to how much the already-ridiculous noise levels may increase if the operators are free to use larger and noisier drones. Regulation and limitations **MUST** be put in place to protect those affected. **Activities generating 80 decibels of noise would not be tolerated or accepted in a domestic residential area in any other circumstances.**

I trust the above concerns will be taken into account in your inquiry.

Please note that I would like my submission to remain anonymous.

Yours sincerely,

[REDACTED]



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 14

Date Authorised for Publication: 7 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM



Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	[REDACTED]
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	

Please note, I would like my submission to remain anonymous.

I am writing to the Inquiry as when I have visited my family in Bonython I have seen the drones flying and how it upsets the residents. I certainly do not want any part of a future drone trial in Canberra.

They are very noisy and disrupt the peaceful bush environment of Canberra. The noise they make it terrible and frightening. Having seen one fly over my family's backyard is certainly an invasion of their privacy. I want nothing to do with them; they will ruin the beauty of Canberra.

Thank you.

[REDACTED]

[REDACTED]

January 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 15 (Withdrawn)

Date Authorised for Publication: 7 February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 16

Date Authorised for Publication: 7 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	Andrea Sheather
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	[REDACTED]

Optional:

How long you have lived in the area:	20 years
Occupation:	Retired
Any other background information:	Public Service 35 years, covering policy, customer service, statistical analysis, budget and project implementation, compliance and fraud.

To the Standing Committee on Economic Development and Tourism,

I would like to thank you for taking the time to hear the concerns of the residents of Bonython (and Canberra) into the Drone Delivery System in ACT. As a resident of Bonython, I have developed a thorough understanding and knowledge of this trial.

As a member of the Bonython Against Drones Action group, (a 'non-political' action group) I have provided information (through a face book page, website and through various media avenues) and ensured that residents could have their say and advised them where to direct their complaints and issues.

I have never in my history (including working with disadvantaged people) seen such an emotional reaction by people to this drone trial. Distressed mothers, frightened children, frustrated families and many others aggravated by the invasion of drones.

I am also conscious that because of the nature of the trial, Wing received death threats because of the impact of the drones on people's lives, this was confirmed by the local police. Comments such "shoot them out of the sky" were commonplace. I have had to advise people NOT to break the laws and what the subsequent penalties could be.

Whilst the main immediate issue with the drones was the noise, the loss of wildlife and birds in the area was also significant. This was reported by many residents. The loss of our peacefulness and amenities was immediate. The trial introduced angst between neighbours where deliveries occurred. The delivery of "coffee and burritos" seen as a frivolous activity. The impacts on neighbours and those in the drone delivery flight paths were exacerbated by multiple flights.

One of the other major concerns was the inability to obtain information, feedback and have authorities take responsibility for the trial impacts. There are no regulations which cover these drone impacts, the technology is too new and the laws outdated. There is no agency which oversees the trial or performs a compliance role over the drones. This meant that Wing could effectively do what they like, report what they like and have no accountability what so ever.

A major frustration was in seeking answers and solutions. Given that advice of aviation experts was sought by myself and others in order to fully understand the issues, the contempt to which agencies and Wing responded with evasive and incorrect information was unacceptable and simply reflected that they were either out of their depth, or treated the residents against the trial with no respect. Examples of these are contained in the attached submission.

I would also like to acknowledge I am not against the use of drones, they can be a very valuable resource, especially in emergencies, etc. However, this current trial has only damaged any reputable drone users, exposed lack of regulations and loopholes which Wing have exploited.

Thank you for the opportunity to provide comment. This submission contains my own individual viewpoints.

Andrea Sheather

I would like to comment on the following terms of reference:

1) The decision to base the trials of the technology in the ACT and surrounding region

The decision to base the trial in the ACT was initiated by the ACT Government and Google X. During this process there was no consultation with the public, nor were the residents of Bonython asked if they wanted to be part of the delivery trial. Extracts from Hansard clearly show that this trial is not about a delivery trial of “coffee and burritos”, but an experiment in managing airspace and developing drone technology

Unfortunately, the residents of Bonython (and previously Royalla) were the test guinea pigs for the technology trial.

Hansard (extract below) states ACT was chosen given the government’s progressive approach. It is more likely that the ACT was chosen because the ACT Government were the ones who agreed to this stupidity of have commercial and large drones flying directly over urban areas without adequate regulations in place. All other States/Territories in Australia and countries in the world have not allowed such trials to proceed, given the safety and other risks to the general public.

Extract from Legislative Assembly for the ACT: 2018 Week 7 Hansard (31 July) . . Page.. 2380 ..

“Following San Francisco we took an opportunity to visit the headquarters of Project Wing, formerly known as Google X, which runs Project Wing, where we met a number of representatives and spoke to them about the next stage of the project here in Canberra. I am sure that you are all aware of Project Wing, a drone delivery initiative being piloted here in Canberra and testing in Bonython at the moment. We were chosen by X as a place to trial this technology, given the ACT government’s progressive approach and commitment to innovation, which is becoming more and more recognised around the world.

We were fortunate enough to have the co-founder of Google Sergey Brin join us for the meeting at X. Mr Brin was impressed with the ACT’s strong commitment to innovation and our progressive attitude to change. I have since written to Mr Brin offering them further assistance should Google X wish to establish further businesses in Canberra.

Finally, with Canberra the test ground for drone delivery, the team at X facilitated a visit to NASA to see the work that they are doing on managing airspace for drones, similar to current air traffic control but for what is expected to become a very congested space as the drone delivery business continues to grow. This was a fascinating part of the visit and was directly relevant to our leading-edge work with X on the development of drone technology for mainstream delivery.”

Legislative Assembly for the ACT: 2018 Week 7 Hansard (1 August) . . Page.. 2543 ..

The ACT government continues to work with Google's Project Wing and NASA on flight algorithm and drone delivery testing in Canberra. I am confident this work will benefit the application of machine learning in flight and also advance into autonomous vehicle navigation applications later on.

I previously stated that we were not consulted about the trial. Wing held a BBQ at Pine Island (about 50 people attended), gave a presentation at the Tuggeranong Community Council (about 20 people attended) and did a letterbox drop to the Bonython residents (we estimate to only 1/3 of the households as unit and flats were excluded, as were letterboxes marked 'no junk mail or advertising'). This was information giving, not consultation. The letterbox pamphlet stated "Tuggeranong residents are invited to come by and get to know the Wing team, learn about the trial and order free prizes by drone". The trial was also agreed to by ACT government and CASA. We do not consider this as consultation.

I am also concerned that Wing have already proposed future developments and expansion of the drone service in Northern Canberra, despite the Bonython Trial not yet completed, OR a evaluation of the trial been conducted. Wing (James Ryan) was quoted in the Canberra Times stating, "we decided to invest in our first ever ongoing operation in Canberra because it's a growing innovative city and Canberrans have a reputation as early adopted of new technology". He also stated they had started the process of obtaining approvals from CASA to fly in the northern suburb. A spokesperson for CASA said Wing had only signalled its intent to apply for permission to operate the service.

2) The economic benefit of drone delivery technology being tested in the ACT including;

a. The investment that has been brought in to the Territory.

There has been no investment brought to the ACT as drone delivery trial was for free. The trial failed to provide any competitive opportunity to other delivery providers. If a delivery fee was charged as part of the trial, then a true analysis of the investment could be done. In addition, a true delivery trial would have included a "fee" for delivery. The lack of a fee means that some people joined the trial as a novelty. Until a fee is included in the costs, the real value of using the services cannot be assessed.

Wing had a strategy paper prepared and publically released, "Drones: delivering benefits to the ACT"(Canberra Times 16/11/18). The report claimed a growth in retail sales in the ACT by \$40 million by 2030. There is no evidence in this report to substantiate where and in which industries the sales will be generated from.

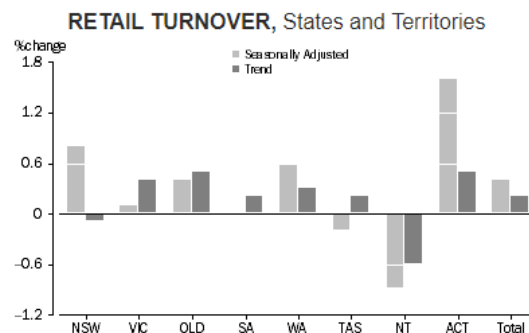
According to the Australian Bureau of Statistics (ABS) Retails Trade No 8501, November 2018, the growth of retail trade in ACT is currently 1.6% seasonally adjusted. The main

growth was in household goods and personal items (note, these items are not delivered as part of the trial and their size and weight would preclude them). Sales in food and takeaway items reduced (the components of the trial). An analysis of retail growth in the ACT shows that over the past five years shows an average growth of \$20 million per year in retail trade. Therefore the claim by Wing is unsustainable and unfounded, as ACT's economy is already demonstrating strong growth in retail. Introducing a new method of delivery will not impact or add to this growth.

TOTAL RETAIL - BY STATE

The following states and territories rose in trend terms in November 2018: Queensland (0.5%), Victoria (0.4%), Western Australia (0.3%), South Australia (0.2%), the Australian Capital Territory (0.5%), and Tasmania (0.2%). New South Wales (-0.1%), and the Northern Territory (-0.6%) fell in trend terms in November 2018.

The following states and territories rose in seasonally adjusted terms in November 2018: New South Wales (0.8%), Queensland (0.4%), Western Australia (0.6%), the Australian Capital Territory (1.6%), and Victoria (0.1%). South Australia was relatively unchanged (0.0%). The Northern Territory (-0.9%), and Tasmania (-0.2%) fell in seasonally adjusted terms in November 2018.



Source: ABS

The report also claims to reduce delivery costs for businesses by up to \$12 million per year. Given that the drone trial was completed for free and no costs were involved to the consumer, the take-up rate for this type of services is unknown. According to media reports, Wing state that 160 households (out of 3,700 households of which 65% (1,547) were separate dwellings so therefore eligible for the trial) in Bonython signed up for the delivery trial. Wing reported 2,000 deliveries in the 5 months. The take-up rate was less than 10% of the population in Bonython. 2,000 deliveries over the 5 months equates to 100 deliveries per week. Given this low number, and the significant negative community reaction in Bonython to limited drone deliveries, the impacts will be magnified 1000 times if as they claim, Wing will be doing 11,000 deliveries per day in the Northern Canberra suburbs.

How Wing/AlphaBeta report extrapolated this figure to over 11,000 deliveries per day in the Canberra northern suburbs (Gungahlin, Palmerston, Grace, Harrison and Franklin) is also unfounded. The total population of these suburbs (ABS Census data) is just over

30,000, of which only 47% (5,530 dwellings) of total dwellings (11,500) would be eligible. If the take-up rate is similar to Bonython, then only 550 households in Northern Canberra would join the proposed trial. Wing would have to undertake 20 deliveries per day per household to reach their forecast numbers. Even if there was 100% take-up, it still assumes one delivery per day per household. Current courier and take-away delivery services do not perform at these levels. Given that only 'lighter items – less than 1.5 kilos' can be delivered, the numbers are unsubstantiated and make a mockery of these forecasts.

Evidence about 'eligible households' references in the Canberra Times, where James Burgess from Wing stated "they were looking at ways to deliver to high-rise buildings. Would it be roof-top, or some type of mailbox on people's balconies?".

Unreliability and limited delivery options

In addition to the low take up rate (10% of eligible dwellings), there are a number of contribution factors which make many households ineligible for the drone delivery service. These include the following restrictions:

- Drones cannot delivery to high rise buildings
- Drones cannot delivery to other high density residences (units, flats, aged care, etc) as there is nowhere within these bounds that they can deliver a parcel
- Drones cannot operate within national areas of significance – such as near parliament house, treasury, etc
- Drones cannot operate at night time
- Drones cannot operate over public areas, such as parks, schools, sports grounds, etc
- Drones cannot operate within 5km of airport
- Drones cannot operate when there is a total fire ban
- Drones cannot operate in adverse weather conditions including high winds, storms and rain.
- Many parcels require a "signature" from the resident
- Special requirements to leave parcels (such as placing around the back of property , etc) cannot be accommodated
- Drone can only deliver up to 1.2 kilos, any larger requires either multiple trips or a larger drone.
- Any other unforeseen circumstance

The impact of these was recently reported in the Wall Street Journal article where a Bonython resident had ordered a lunch meal. The size of this meal required 3 drone deliveries. The first two were successful, however due to the high winds; the third meal was delivered by vehicle.

Compliance

Another large concern is the lack of regulations and compliance measures over drones and with this trial (as Wing only have to self report any incidents). Bonython residents have witnessed and reported a number of incidents. Wing claim these are 'controlled landings', we claim they are incidents. The federal government announced in May 2018 additional money to CASA to help develop compliance. Until these measures are in place, there should be no trials. It is the same analogy as trialling driverless cars on our roads, what happens if there is an accident, how do you protect the public?

The Civil Aviation Safety Authority will receive a \$2.9 million boost thanks to the budget in order to manage safety standards and associated compliance for recreational and commercial drone technologies in Australia.

<https://www.innovationaus.com/2018/05/Budget-2018-A-tech-round-up>

As no one is responsible for drones compliance, who would stop other drones operating? We could have drones popping up everywhere and not enforcement. What is stopping private and anti-drone due in the ACT or counter-drone operators establishing services in Canberra? In the US they are not allowing commercial drone use due to identified risks. The US is forward looking and can see that congestion due to the small amount of aircraft is a massive risk. NASA has signalled that airspace management solution testing for the future, but until then the US government will not allow commercial use for deliveries. The question then is why in ACT government allowing this trial?

Lack of transparency and incorrect information

Despite repeats requests to Wing, they have advised they would not share their feedback publically or to the ACT government. They will only provide a 'summary' at the end of the trial. I believe a proper and thorough audit should be conducted on the trial to ensure the veracity of the results and that government assistance has been appropriate and worthwhile.

There are numbers of conflicts in information reported by Wing in the media. Another example is SEERE, where Wing stated before they moved to Bonython that there "*was a*

potential 50,000 new tested in Bonython region". The population of Bonython is only 3600.

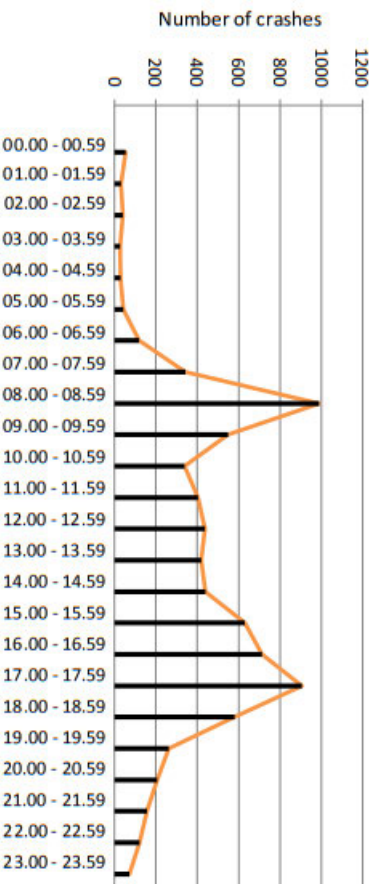
Transcript from Breakfast with Dan Bourchier 12/11/18. James Burgess states " *There are a small number of residents in Bonython who have been highly organised and voiced their complaints repeatedly to us, and we welcome that. I don't know the exact numbers but it is roughly about 10 percent negative versus positive responses. It's about 160 trialers using the service and we have 800 or 900 more who are interested*". All the latest media articles since this statement only refer to the 160. There are NO 800 or 900 more. Incorrect and false statements in the media by Wing are commonplace.

Gai Brodtmann, responded with accurate statistics stating that she had had 124 people in touch with her, 19 positive, 91 negative and 14 neutral. That equates to 75% AGAINST the drones – a similar number to the estimate provided by the Bonython Against Drones Action group when they had the petition signed.

Wing have also quoted in the Canberra Times (December 10/12/18 – more than 10k drone flights daily in ACT, that " *they would be cutting traffic and would reduce the number of road accidents and have fewer people hurt*". They quote almost 8000 motor vehicle accidents a year of ACT road. The ACT 2016 crash report confirms that the number of accidents is around this number. What Wing failed to clarify is that the majority of accidents (over 50%) coincided with peak hour traffic. Therefore, the statements that drone deliveries would reduce road accidents is incorrect and irrelevant, because peak hour traffic will still continue. What the ACT Crash report does not contain is the location of the crashes. The figures quoted by Wing should only represent the area in which they propose to fly. Based on population statistics, only 14% of the population of ACT lives in the proposed Northern suburbs area. Using the whole of ACT population and road statistics is misleading. Also misleading is the statement about making local wildlife safer. Only 160 of the accidents in the report were caused by wildlife. Again, given the medium to high density of the proposed Mitchell area (northern Canberra), except for the grass land nature reserves (which are fenced in), this statement about making it safer for wildlife is untrue.

http://cdn.justice.act.gov.au/resources/uploads/JACS/PDF/ACT_Road_Crash_Report_2016_web_accessible.pdf

The peak hours for crashes coincided with traffic volume peaks as demonstrated in the graph below.



Wing continue to make the same statement in the media without proof. The statement “our service in Mitchell will increase sales for local businesses, result in cleaner air and make Canberra’s and local wildlife safer by taking cars off the road”

b. The number of jobs that have been created as part of the trial.

The proposed expansion of the trial will result in job losses. There has been no growth in jobs as the drones themselves are “unmanned and operate automatically”. Operating the drones requires licensed and trained drone operators. Depending on how the future service operates, the business from which the delivery is originating will attach the “package” onto the drone for the delivery. Therefore, we are now faced with potential job losses from those employed in the courier and delivery area. These are generally low skilled, low paid and casual jobs. The drones will replace people employed in courier and delivery areas.

Evidence that delivery drivers would be replaced by the buyers and sellers themselves is stated in the Canberra Times 15/11/18. Steve Evans quoted James Burgess’s description of how the service would work in Mitchell as “the drones would hover 7 metres off the ground and lower a line with a container. Sellers and buyers would hook and unhook the baskets containing the goods”. So, the end result – job losses.

c. The extent of collaboration with local industry and academic institutions

There has been no collaboration with local industry and academic institutions. Wing did not use local Tuggeranong business, instead using companies that were not part of the Tuggeranong business community. The entire extent of their slick marketing campaign focused on KickStart (for the coffees) and Gomez and Gomez (for the burritos), and Chemist Warehouse – none operating in the Tuggeranong area. The Australian Journal

of Pharmacy reported in their journal on 10/9/2018 the residents' concerns and that there were already 5 "chemists in the area. If you are feeling sick or miserable I'd rather go someone and get professional advice". This was also supported by the local Capital Chemist who sponsored the Bonython Against Drones Action group Bulletins, as they were concerned about the issue of pharmacy products without advice and also by an outside business.

As far as we are aware, there has been no collaboration or discussions with local couriers and delivery agencies.

3) The extent of regulatory oversight of drone technology at various levels of government including;

a. Local authorities such as EPA, Worksafe, Access Canberra

EPA – There are not regulations under the EPA Acts that apply to drones, therefore the EPA has not accepted any responsibility for addressing concerns such as the excessive noise levels. The Environment Protection Act 1997, Section 8 specifically does not apply to "Aircraft" (see below).

- 8 Limitation of application in relation to certain people and things
- (1) This Act does not apply in relation to noise made by or a pollutant emitted into the air by—
- (a) a light rail vehicle or other train; or
 - (b) a Commonwealth jurisdiction aircraft within the meaning of the *Air Services Act 1995* (Cwlth); or
 - (c) a person using only his or her body; or
 - (d) an animal; or
 - (e) a motor vehicle being driven on a road unless the motor

ACT Government has not accepted responsibility for the noise – see Attachment E.

Air Services Act 1995 and Air Services Australia are only responsible for "manned" aircraft". Hence the problem that drones are classed as "unmanned". This means that the only avenue to complain about the noise was to the company making the noise "Wing".

Worksafe – have nothing to do with this trial or drones.

ACT Parks and Wildlife – we are aware that Parks and Wildlife (through various emails), granted an exemption for the drone trials to fly over the relevant parks in the Bonython area including Pine Island (a popular sport for Canberrans during summer). Part of the condition was the Wing were supposed to do an avian study. This has not occurred either at the start of the trial (where a baseline could be established on the wildlife in the area), or

since the trial has started. We believe Wing were supposed to hire their own consultant. As far as we are aware, none of these requirements have happened. The ACT government is failing to follow up on any of the imposed requirements, make information available or take responsibility for its actions in allowing the trial to proceed.

Access Canberra – we are aware many complaints were referred through Access Canberra, however as these were outside the “normal business” for the government, they were referred incorrectly back to CASA . No one in local government had any idea of who, where and what to do with complaints. The Action Group has sent many emails and letters to ACT government, and has either received incorrect information or no response at all. Attachment D is an example of a letter to the Chief Minister and Minister Gentleman. A reply 6/1/2019 (Attachment E) states Act government not responsible for noise.

The question to ask is – who is? No one as not covered in any regulations, State or Federal. .

b. Commonwealth agencies such as Air Services Australia, Civil Aviation Safety Authority

CASA are only responsibility for safety aspects of the drones. Despite the residents of Bonython reporting drone incidents, these were ignored by CASA as Wing are required to ‘self report’.

The Bonython Against Drones Action Group also wrote to the Minister for Transport, Infrastructure and Regional Development highlighting the many issues due to the drone trial and lack of oversight and regulations. The original and response (Attachment C) by the Federal Minister acknowledges that a whole of government approach to RPAS (drones) will be required.

The response agrees with the recommendation to develop a whole of government approach to RPAS in Australia. The Department of Infrastructure, Regional Development and Cities will lead this work with relevant departments and agencies to develop a clear view on those matters that fall outside of the Civil Aviation Safety Authority's remit; including privacy, noise and environmental impacts. It is the intent that this work will help to clarify for the public, the separate areas of responsibility in relation to drone issues.

Given that there are no laws in place to manage the impacts of the drones, it is immoral that the trials continue. Until the Australian public can be assured of its safety and basic human rights (United Nations Human Rights Declaration Article 12), then all commercial use of drones should be ceased. We have laws that manage our roads and penalties for those who do not abide by the laws. We should have laws for managing airspace (outside those areas already under regulations by Air Services Australia).

Air Services Australia – no responsibility as unmanned aircraft

CASA – is only safety. However, why relax the standard rules for a trial, as this infers that if the trial going into live production, the general rules for drones would have to be relaxed. Why CASA allowed trial in the first place (under due diligence and duty of care) when the federal enquiry identified so many issues which as still unresolved.

The FOI document from CASA revealed risks assessment and changes to regulations to allow the trial over Bonython. Given the number of recent drone incidents worldwide (Gatwick airport, Canberra NYE, Tasmanian Bush fires, etc), we question why the rules would even need to be relaxed and changed for the trial. If Wing cannot operate within the current laws, then it brings into question other issues such as favouritism and non-competitive nature of the trial. Will CASA change the rules for other drone delivery agencies (such as Amazon). On what basis was this business decision made?

4) The extent of any environmental impact as a result of trialling drone delivery technology on;

Carbon Footprint – claims by Wing that drones will reduce carbon footprint is incorrect

Two key points are:

- (1) The reduction in carbon footprint by drones only applies to where they don't have far to fly and have a light load – therefore a very small component of the delivery courier industry.
- (2) Does not acknowledge that by 2030 over 50% of cars will be electric, this change in itself will significantly reduce the carbon footprint of vehicles and delivery services. (Note, Australia Post are already using electric bikes)

Wing claim that the drones have a less carbon footprint. The research they refer to is by Professor Goodchild in the USA (Riot Act website). The article has been misrepresented by Wing as it actually it states “ researchers found that drones tend to have carbon dioxide emissions advantages over trucks when the drones don't have to fly very far to their destinations or when a delivery route has few recipients”. Trucks — which can offer environmental benefits by carrying everything from clothes to appliances to furniture in a single trip — become a more climate-friendly alternative when a delivery route has many stops or is farther away from a central warehouse”. The statement by Profession Goodchild “that drones have a less carbon foot print” is only correct when it applies to small and light goods.

<http://www.washington.edu/news/2017/05/30/drone-vs-truck-deliveries-which-create-less-carbon-pollution/>

The statement by Wing also fails to take into account the reduction in carbon footprint with the introduction of electric cars and vehicles. Electric vehicles (EVs) use is growing very strongly across the Globe (approx. 30% growth in 2016). It is forecast that by 2040, 55% of all new car sales globally will be EVs.

Source: https://www.carbonfootprint.com/electric_vehicles.html

<http://kab.org.au/blog/keeping-australia-beautiful-with-the-environmental-benefits-of-electric-vehicles/>

Environmental Benefits of Electric Vehicles (extract)

While there are numerous benefits to having more electric vehicles on Aussie roads, the environmental advantages in particular cannot be stressed enough. There are almost no ongoing costs to the environment at all when an electric vehicle is being run on renewable energy and these ongoing operational impacts heavily outweigh the environmental costs of production and disposal, especially when taking into consideration that many parts of EVs are often built from recycled materials.

According to a 2012 paper released by Victoria's Department of Transport, an electric vehicle operating on renewable energy can provide a net benefit in terms of lifecycle carbon emissions in just three years of operation and give savings of more than 50 per cent across its 20 year average lifetime.

If the ACT wants to significantly reduce its carbon footprint, then along with the light rail, the government should be encouraging EVs, installing more charging stations, etc.

Economy of Scale

Letter to the editor by myself. *How many trips does Australia Post need to complete to deliver 1000 letters to residents in Bonython in one day. Answer: One trip by one postie on his electric bike. How many trips does a drone need to complete to deliver 1000 letters to residents in Bonython in one day. Answer – that would be 1000 noisy trips. Where is the economy of scale and savings in this?*

a. Residents within the trial area

As mentioned in the key taking points - Attachment B:

- The drones are large, very noisy like at F1 racing car and make a high-pitched sound which you can hear them from a long way off. NASA study says drones are more annoying than trucks, motorbikes, etc. Drone noise has been measured at 85 decibels from 35 meters,
- Over 80% of the residents in Bonython oppose the trial.

- Canberra Times online survey (15/12/18) resulted in over 68% of Canberrans saying they opposed any drone delivery trials and another 15% unsure. Only 17% said they would use the drone delivery service if offered in their suburb.
- No agency (ACT Government, CASA, Airservices Australia) will take responsibility for monitoring the noise made by drones. (see Attachment D – letter to ACT government)
- They can be heard from inside closed houses, even with double-glazing and it is going to get worse when people have their houses open in warmer weather.
- Various media articles quote Wing (Ryan Burgess) as saying “we have received a lot of feedback from the community about what would be most acceptable and we think targeting commercial and industrial areas for a future site makes a lot of sense. He said the company took the feedback to heart and was currently looking at ways to address the issue and improve the system. (Riotact 267723).

b. Native wildlife and domestic animals

- The bird life has enormously decreased in the area.
- Dogs are reportedly stressed and injuring themselves as they are spooked by the drones.
- Neighbours are complaining because of the dogs barking continually on flight days.
- No avian study on impacts.
- We have video evidence on our website of a magpie attacking the drone. Wing are aware of this as it was brought to their attention (via email) and they responded in the usual non committal way “thank you for the information”
- Extract from letter to Canberra Weekly by Lyn and Robert Newham. “We walk around the Stranger Pond reserve and are always mindful of the drones. The pond has been home to a pair of nesting swans and their families, ibis, pelicans, cockatoos, parrots and other bird life that have been there in the 20 years we lived in Bonython. Since the drones, only wild ducks remain”
- Local Royalla newspaper editor reported to Bonython Against Drones the issues they had with their drone trial, “Royalla group began posting angry accounts of livestock being harmed as they ran in fear from the low-flying drones. Their group had trouble getting their voices heard as no media were interested as ‘drone as cool, no parliamentarians were interested, CASA had approved the trial and the amount of noise this man was experiencing was not concern to anyone”. Bonython resident experienced the same issues, however our voices were heard as more residents united against the drone trial.

5) Ways to improve the use of drone delivery technology within the ACT

Use drone technology for purposes which make it unique and valuable. Anyone can have deliveries done by existing methods, with no impact. Encouraging deliveries to be done by EV's will reduce the carbon footprint. Drones need to focus on specialist and other emergency services, where they will make a valuable impact. There are many of these examples already in the community, life saving, aerial photography, search and rescue, surveillance, delivering immunisations and medical supplies to remote areas, surveying, digital surface modelling, aerial Delivery of Packages and Humanitarian Relief Supplies, assistance with agriculture, etc

6) Any other relevant matter(s)

Risks

There are many other matters and risks associated with the drone delivery service by Wing which remain unanswered or uncontrolled. There are outlined in Attachment B – Key talking points and include:

- Privacy concerns and data storage
- Loss of amenities by residents.
- Cyber security
- No formal oversight, government agencies are currently not funded or legally obligations to manage compliance of drones.
- Lack of laws and regulations
- Violation of human rights

Privacy risks are well known and totally uncontrolled. Recent article by Legal Eagle highlights all the issues.

http://thelegaleagle.com.au/drones-neighbours-and-privacy/?fbclid=IwAR1fjU2CplLwGoptRFdEEYr1WgcMVQ6DaQD3ikZabqneyVNddb3Jr8OA_dg

Federal Government submissions

The Federal Government in 2016 called for a submission into the Regulatory requirements that impact on the safe use of Remotely Piloted Aircraft Systems, Unmanned Aerial Systems and associated systems.

https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Rural_and_Regional_Affairs_and_Transport/Drones

There are many concerns and issues included in the submission, and I strongly suggest if the Standing Committee on Economic Development and Tourism are to be better informed on the issues of drones, they should read the various submissions

The submission by Adelaide University raised many valuable points including, “*The authority to enforce restrictions on the location of RPA activity is not sufficiently expressed in current Regulations. At present there are constraints on operations near airports or helipads and a general restriction on flights over populous areas (unless adequately controlled). Under current Regulations, RPAS operations must be conducted within line of sight, so air and ground space is necessarily co-located for the duration of any operation. Permission to access land, particularly in urban areas, is not contemplated under the current Regulations. The responsibility for such approval generally falls to state or local governments. These levels of government are generally not knowledgeable about the operation of RPAs and are not authorised or sufficiently informed to check credentials or ask relevant questions. These levels of government need to be prepared to provide local area compliance support as public and commercial use of RPAs expands. This preparation should extend to enforcement officers, such as police, who should be trained in the regulation of RPAs and authorised to control inappropriate RPA activity.*”

Their submission also mentions CASA’s role and the need for it to be adequately resourced to manage compliance of drones.

“The resourcing of CASA to ensure that the regulator has capacity to administer existing regulatory requirements needs to be carefully considered and a growth plan implemented. The role of the regulator will be critical in the coming years as the industry expands. Delays in servicing the industry will hamper this expansion. For instance, the current Regulations anticipate the issue of a Manual of Standards to provide clarification and certainty on a range of operational dos and don’ts, The Manual has yet to be issued. It can only be assumed that the resources to complete the task are not available.

At present, risk to public safety at the local area level is largely being overseen by those with knowledge of the regulations and safety requirements (such as CASA approved pilots). This general responsibility is beyond their remit and legal authority. The development of local enforcement capacity needs to be considered in the context of public safety and privacy. As well as liaison with local and state government agencies, CASA also needs to be able to anticipate and respond to developments in a fast moving industry.

Recently, significant delays in both initial response to enquiries and approvals through the

CASA RPAS office have occurred. It appears that this is a result of staff turnover and understaffing. Given the huge momentum behind the RPAS industry, the critical importance of ensuring public safety and the potential competitive benefit to Australia, it would make sense for CASA to take a generous approach to staffing the RPAS office, and be funded to do so“

Attachment A: Petition

Drone delivery trial—petition 23-18

By Ms J Burch, from 1,043 residents:

To the Speaker and Members of the Legislative Assembly of the Australian Capital Territory

The following residents of Bonython, ACT, draw to the attention of the assembly that:

- We are subject to the Project Wing drone trial in Bonython.
- We were not consulted in a genuine manner about the trial prior to its approval and start up.
- We have no specific and formally established avenue to submit complaint or feedback other than to Project Wing.
- We find that there is no due governance and transparency in overseeing the trial.
- We find this trial subjects us to unacceptable levels of noise, is a gross invasion of privacy and subjects us to unacceptable safety risks.
- We find this trial compromises our right to peace, privacy and a good quality of life (refer to United Nations' Universal Declaration of Human Rights, article 12).

Your petitioners, therefore, request the Assembly to:

- Commit to ceasing commercial drone delivery trials in Bonython and any future trials in the ACT forthwith.
- Acknowledge the impact on residents of commercial drones regularly and frequently flying over our homes and within the suburb.
- Acknowledge our right to peace, privacy and a good quality of life, to not fear for our safety and not feel anxious about the possibility of drone accidents.
- Acknowledge the detrimental impact of drones on pets and wildlife.

Pursuant to standing order 99A, the petition, having more than 500 signatories, was referred to the Standing Committee on Economic Development and Tourism.

Economic Development and Tourism—Standing Committee

Statement by chair

MR HANSON (Murrumbidgee) (10.47): Pursuant to standing order 246A, I wish to make a statement on behalf of the Standing Committee on Economic Development and Tourism. Following the referral by the Assembly on 1 November this year of an inquiry into drone delivery systems in the ACT, the committee has agreed to call for submissions. The committee would like to hear from all parties involved in or affected by the trial, including residents, companies and regulators and anyone else who may be affected by the regulation of commercial drone activities. The committee is requesting submissions by close of business 22 February next year.

Attachment B: Key talking points of issues – Bonython Against Drones Action Group

All the issues were well known and identified in the risk assessment between CASA and the ACT Government (gained under FOI).

The decision to base the drone delivery trial in the ACT was initiated by the ACT Government and Goggle X. During this process there was no consultation with the public. Extracts from Hansard clearly show that this delivery trial is not about a delivering “coffee and burritos”, but an experiment in managing airspace and developing drone technology.

The risks outlines in the risk assessment are detailed below with the actually impacts of these risks:

1. Noise

- The drones are large, very noisy like at F1 racing car and make a high-pitched sound which you can hear them from a long way off. NASA study says drones are more annoying than trucks, motorbikes, etc.
- No agency (ACT Government, CASA, Airservices Australia) will take responsibility for monitoring the noise made by drones.
- They can be heard from inside closed houses, even with double-glazing and it is going to get worse when people have their houses open in warmer weather.

2. Privacy concerns

- Surveillance and intrusion of privacy.
- There is no open and transparent management of personal information collected.
- Wing state that images are stored for 30 days, however in that time we have no knowledge who has access to that data, for what purposes and is it being shared with a third party?
- Risks assessment acknowledges that there is “no recognised common law action in tort for breach of privacy”.

3. Impact on wildlife and domestic pets

- The bird life has enormously decreased in the area.
- Dogs are reportedly stressed and injuring themselves as they are spooked by the drones.
- Neighbours are complaining because of the dogs barking continually on flight days.
- No avian study on impacts.

4. Loss of amenity – visual and noise pollution, emotional and mental health

- Anxiety and stress levels due to anger are increasing every time they hear a drone fly over.

- Some young children are too scared to go outside when the drones are around.
- Disturbing for those who need to sleep (shift workers) during the day.

5. Cyber security

- Canberra has many sensitive government agencies. Parliament house recently constructed a “drone shelter” to prevent security attacks from drones.
- Media reports of large companies (face book) breaching privacy and security.

6. Sensitive location – geographical issue

- Not supposed to fly over nature parks and public areas, all these rules relaxed for this trial. When at Pine Island you can hear the high-pitched drones take off, where normally it was the sounds of birds and nature.
- They fly over the local mountain bike trail.
- There are many identified high risks areas in ACT.

7. Distraction risks to drivers, cyclists and pedestrians, safety, collision with people, infrastructure, other drones

- Wing self report to CASA, and have not reported any safety issues, even though many cited by residents. Wing claim they are ‘controlled landings’.
- No independent body or agency which regulates or polices Wing.
- There have been a number of mishaps that have been reported to us by residents that are not acknowledged by Wing, CASA or ACT Govt. We have video evidence of bird strikes.

8. Land use concerns. Delivery drones are not currently defined in the territory plan, thus not permitted except under a temporary use.

- Why are they allowed to operate on nature reserve and within the Murrumbidgee Corridor? This involves the commercial use of a public nature reserve.

9. Feedback and reporting (ACT government agency objections)

- There is no specific and formally established avenue for residents to directly submit feedback or comment other than through Wing. Wing has already stated they will not release the feedback publicly or to the ACT government. Wing is self assessing and undertaking their own review of the trial.
- ACT Government does NOT acknowledge valid concerns by residents
- CASA and ACT Government received complaints and failed to respond too many.
- The ACT Government imposed this trial on Bonython residents with no consultation or consideration of the impact on people's lives. There has been no collaboration or collective decision making involving Bonython residents.

10. Trespass

- No laws about airspace over homes.
- Recent media exposure of illegal drone activity.

11. Fire ignition

- Not allowed to operate during period of fire bans.

12. Negligence

- Are we covered by public liability?

13. Reputational damage

- Local business - the chemist and Mexican food businesses currently operating in the drone delivery service are not local to the area and undercut existing businesses.
- Wing and the ACT Government are not presenting transparency on the drone issues.
- Wing has provided information only in the form of advertising and marketing their delivery service.

14. Other - Violation of our human rights, UN Article 12

- Because there are no regulations (except for CASA around safety) that cover the operations of the drones, no one can refute their use with other legal arguments.
- The drones do interfere with our family/life. It is morally and ethically wrong that we are subject to this trial without any recourse.
- This is a direct violation of our human rights as Article 12 of the Universal Declaration of human rights states “No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honour and reputation. Everyone has the **right** to the protection of the law against such interference or attacks”.
- In a response from Minister for Infrastructure, Transport and Regional Development dated 5th December 2018, he admits there are gaps in the law and “they need to work with relevant agencies to develop a clear view on those matters that fall outside CASA’s remit, including privacy, noise and environmental impacts”.

15. Other - Parliamentary Enquiry in place (submissions due 22/2/19)

- Canberra Liberals have called for a parliamentary inquiry into household drone delivery services in the ACT. An inquiry has been approved following significant complaints about the drones since the trial started in July.

16. Purpose of drone deliveries - Unreliability and limited delivery options

- Low take up rates with only 1.5 – 2% of Bonython households electing to participate in the trial.

- There are a number of contribution factors which make many households ineligible for the drone delivery service. These include the following restrictions:
 - Drones cannot deliver to high rise buildings
 - Drones cannot delivery to other high density residences (units, flats, aged care, etc) as there is nowhere within these bounds that they can deliver a parcel
 - Drones cannot operate within national areas of significance – such as near Parliament House, Treasury, etc
 - Drones cannot operate at night time
 - Drones cannot operate over public areas, such as parks, schools, sports grounds, etc
 - Drones cannot operate within 5km of an airport
 - Drones cannot operate when there is a total fire ban
 - Drones cannot operate in adverse weather conditions including high winds, storms and rain.
 - Many parcels require a “signature” from the resident
 - Special requirements to leave parcels (such as placing around the back of property , etc) cannot be accommodated
 - Drone can only deliver up to 1.2 kilos, any larger requires either multiple trips or a larger drone.
 - Any other unforeseen circumstance

Attachment C – Letter and Response to Hon Michael McCormack MP

Bonython Against Drones
Community Action Group
Stopbondrones@gmail.com

The Hon Michael McCormack MP
Parliament Office
PO Box 6022
House of Representatives
Parliament House, Canberra ACT 2600

media@infrastructure.gov.au
clientservice@infrastructure.gov.au

CC: Mr Anthony Mathews
Chair of the Civil Aviation Safety Authority (CASA) Board
Mr John Weber
Chair of Airservices Australia
Director, Governance Section
Department of Infrastructure, Regional Development and Cities
GPO Box 594
CANBERRA ACT 2601

Dear Sir(s)

We are writing to request that you cease the Drone trial in Bonython ACT. We would like to bring to your attention to current and future issues with the use of commercial drones. Many of these you are aware of as these issues were provided to you in feedback to the Inquiry into the Regulatory requirements that impact on the safe use of Remotely Piloted Aircraft Systems, Unmanned Aerial Systems and associated Systems, December 2016. We question how you could have approved the trial, relaxed the rules around drones, when you were fully aware of the gaps in regulations regarding noise, safety and privacy. Surely under your duty of care, you should have addressed these core issues, before approving any trial?

We belong to a community action group, Bonython Against Drones which was formed September 2018 in response to the large outcry by our residents to the current trial by Project Wing Australia using DRONES to deliver a range of food (coffee and burritos) and some pharmacy products to our suburb. https://x.company/intl/en_au/wing/australia/

The Bonython Against Drones action group main core issues about the drone trial are:

- Noise and impact on our quality of life
- Privacy and safety
- Impact on wildlife
- Lack of transparency and governance
- Insurance and their potential liability obligations – no federal requirement to be insured
- Compensation for losses

We are unable to find anyone to take responsibility for our complaints on any of the issues above. For example, both your agencies (CASA and Air Services Australia) have advised us they are not responsible for the noise. Our local government Environmental Protection Agency also states that it is not their responsibility, and refers us back to CASA.

The issues around safety are also a concern. Your agency, CASA has asked Project Wing to self-report incidents, and although our Group is aware of a number of concerning incidents, Project Wing have apparently reported none to CASA. There appears to us be no overall governance of the trial. No one appears to be responsible for a final 'sign-off' of the trial. It seems that all parties, including Commonwealth and ACT Governments, are abrogating their responsibilities to the company that will benefit. This self-reporting and self-assessing is of great concern to us. In fact, Project Wing have already announced that they are looking to expand in the ACT, prior to ending and reporting on this trial. They have also stated that they will not be providing any of the feedback received to either ourselves, your agencies or the ACT Government. Instead they say they will "summarise" the feedback. No transparency or ability to seek correct information.

We have also identified many other gaps in the current legislation and regulations and as such we are incapable of having our complaints addressed or finding someone to take

responsibility. We believe that Wing (under Google) are using these legislative gaps and loopholes to do what they like.

Our local federal member, Gai Brodtmann recently called for an independent review, following hundreds of complaints to her office. This statement was in the Canberra Times 27/10/18.

<https://www.canberratimes.com.au/national/act/federal-mp-inundated-with-complaints-about-act-drone-delivery-trial-20181025-p50bsa.html?fbclid=IwAR2DXIAhSe9GN9aQbua9uAbkmEicg9QtRniVXLDRkLo0gpmgn0gahhmG7nl>

Today (1st November), Andrew Wall MLA put forward a motion to the ACT Legislative Assembly and called for a committee Inquiry into drone delivery. This motion was successfully passed, demonstrating and reflecting the concerns of the residents and even our local Ministers of Parliament.

https://www.andrewwall.com.au/drone_trial?fbclid=IwAR0VomL_qx-MXacl7XnJ5TYukDbtEqNA3UZ6Z02ayrMPkIXts98Rf_tRpeU

As a community group, we are unfunded and currently run by volunteers. We would happy to provide any information about our experiences and evidence, so that you may use these to further identify and encourage drafting of laws and regulations that will provide protection and avenues to address concerns about the impacts of drones delivering goods in urban areas. Please note, we are supportive of new technology being used in a useful and productive manner (for example drones undertaking rescues, delivering vaccines, remote area mapping, security, military, etc), but not for delivering coffee and burritos in residential areas.

We therefore respectfully request that your stop this trial immediately.

Andrea and Neville Sheather

0406303706 and 0408661159

On behalf of the Bonython Action Group

Extracts from the submissions by legal firms and other references

QBE Submission

QBE – through its specialist aviation division – is a market leader in the insurance of Remotely Piloted Aircraft Systems (RPAS), Unmanned Aerial Systems (UAS) and associated systems throughout Australia.

Under the amended CASR, standard RPA operating conditions apply where a number of requirements are met, including where ‘the RPA is not operated at or below 400ft [above ground level] by day’. For both safety and privacy reasons, QBE is of the view that further consideration should be given to introducing a minimum operating altitude in certain circumstances, especially over private homes and infrastructure, and particularly where consent has not been provided or sought.

Compulsory insurance requirement RPAS can be similar to other forms of motorised vehicles in terms of weight, power, and the damage they are able to cause. As a market leader in this area, QBE’s experience is that the use of RPAS – both commercial and hobbyist – is expanding rapidly, and this trend is likely to continue. QBE is concerned that some operators in this growing sector may not be aware of the full extent of their potential liability obligations. For the protection of third parties, consideration may also be given to requiring some operators to hold a minimum level of aviation and third party liability insurance. This would ensure that members of the public who are injured or suffer damage to property caused by an RPAS would be able to access compensation for their injury or property damage.

Maurice Blackburn Lawyers

Maurice Blackburn Lawyers shares a sense of responsibility for safety through preventative and appropriate regulation, and an interest in ensuring suitable legal mechanisms are available for compensation for losses, in the event laws, technology, or people fail causing injury or death, in the operation of RPAS in Australia.

The technical and regulatory landscape in Australia is such that the owner of a drone or its operator are notoriously difficult to identify, and thus pursue, after an incident. There is no Federal requirement on the owner or operator to be insured for liability for damages. No legislation presently requires registration of non-commercial operators and their equipment. This is problematic because drones themselves are fairly unreliable. There are no international or local airworthiness standards in place for hobbyist operators, nor any import controls on the more powerful machines which are brought into the country daily in droves.

The Civil Aviation Legislation Amendment (Part 101) Regulation 2016 (CALA) which commenced on 29 September 2016 in Australia makes the situation worse, and is based on two-year-old consultation and research on the likelihood of injury occurrence from drones striking humans from above. While the rest of the world has pursued further research on this area and come up with rules which suggest that only very small (micro-or under-250g drones) pose little risk and can be operated under more relaxed rules, Australia has not only chosen to deregulate this weight class but now permits drones up to 2kg to be used commercially by anyone without training, insurance or certification. Furthermore, there must be a development of professional standards of operation for commercial operators by the industry itself, supported by government, and government must work harder to find ways to enforce existing laws against those who misuse drones and put people and property at risk.

Professor Des Butler. I am a Professor of Law in the Faculty of Law at the Queensland University of Technology (QUT)

I would like to address the potential of RPAS to invade privacy and to cause injury to persons and/or damage to property. In the absence of a specific common law or statutory cause of action protecting personal privacy, a piecemeal collection of common law causes of action such as trespass, private nuisance and breach of confidence, all of which have limitations which mean that they do not provide complete protection against invasions of privacy.

The Commonwealth and all States and Territories have enacted Damage by Aircraft statutes which provide for strict liability for injury or damage to persons or property on the ground caused by impact with aircraft or part of an aircraft, meaning that aggrieved persons may recover damages without proof of intention, negligence or other cause of action. Due to constitutional restraints the Commonwealth statute only applies to Commonwealth aircraft (other than Defence Force aircraft), aircraft owned by foreign, trading or financial corporations, aircraft engaged in international air navigation or trade or commerce, trade or commerce between the States, and aircraft landing at or taking off from places held by the Commonwealth. It will therefore apply to RPAS operated for commercial purposes by a trading or financial corporation but does not apply to RPAS operated by, for example, individuals or for recreational purposes. These uses may, however, fall within the ambit of State legislation.

A significant question will be whether RPAS constitute 'aircraft' as defined in the various statutes. 'Aircraft' in the Commonwealth statute has the same meaning as in the Civil Aviation Act 1988 but with the express exclusion of model aircraft. The Civil Aviation Act 1988 defines an 'aircraft' as 'any machine or craft that can derive support in the atmosphere from the reactions of the air, other than the reactions of the air against the Earth's surface.' 'Model aircraft' is not defined in the Damage by Aircraft Act 1999 but is defined in the Civil Aviation Safety Regulations 1998 as 'an aircraft that is used for sport or recreation, and cannot carry a person'.

Piper Alderman

Our experience indicates that the current regulatory scheme is not adequately adapted to meet the requirements of this emerging industry and, in particular, does not strike the preferable balance between fostering innovation on the one hand and ensuring public safety and privacy on the other hand.

Smith's Lawyers

The regulations imposed by the Civil Aviation Safety Authority (CASA) do not require the operator of a drone to respect the privacy of others nor do they prohibit a drone being flown over another persons land or filming persons in private or in public.

Under existing laws, it is generally lawful to take still photographs or to film people in a public space without their consent. A photographer can be prevented from filming while on private property, however, it is legal for them to take photographs of or film any person on private property as long as the photographer is on public property or their own property and they are not filming the a person engaged in a private or indecent act or unclothed.

This means that if a drone flies over your backyard and takes pictures of you in your pool or films you through a window eating breakfast you have essentially no legal recourse for breach of privacy.

CASA advises individuals who believe that their privacy, or the privacy of someone else is being breached by the activity of a drone, can report it to police. However, there are limits on what the police can do to enforce an individual's privacy rights at this stage.



Office of the Hon Michael McCormack MP

**Deputy Prime Minister
Minister for Infrastructure, Transport and Regional Development
Leader of The Nationals
Federal Member for Riverina**

Ref: [REDACTED]

05 DEC 2018

Mr Neville and Ms Andrea Sheather
[REDACTED]

Dear Mr and Ms Sheather

Thank you for your emails of 2 and 18 November 2018 to the Deputy Prime Minister and Minister for Infrastructure, Transport and Regional Development the Hon Michael McCormack MP, regarding the Wing drone delivery trial in Bonython, ACT. The Deputy Prime Minister has asked me to reply on his behalf.

I previously wrote to you on this matter in October 2018, and wish to provide you with an update on recent developments. On 27 November 2018, the Australian Government response to the Senate Standing Committee on Rural and Regional Affairs and Transport report: *Regulatory requirements that impact on the safe use of Remotely Piloted Aircraft Systems (RPAS), Unmanned Aerial Systems and associated systems*, was tabled in Parliament.

The response agrees with the recommendation to develop a whole of government approach to RPAS in Australia. The Department of Infrastructure, Regional Development and Cities will lead this work with relevant departments and agencies to develop a clear view on those matters that fall outside of the Civil Aviation Safety Authority's remit; including privacy, noise and environmental impacts. It is the intent that this work will help to clarify for the public, the separate areas of responsibility in relation to drone issues.

I have sought advice from the Civil Aviation Safety Authority (CASA) in relation to the matter you have raised about operational zones for the Wing drone delivery trial. CASA advised that the exemption instrument RPAS2017-1748 you received under the Freedom of Information request provides Wing with exemptions from CASA's standard operating conditions; that is, it allows Wing to operate within 30 metres of a person and in populous areas, such as urban or suburban zones.

The area of the launch and recovery site referred to by Wing as “the nest” is in open green space adjacent to the suburb of Bonython. CASA has advised that all operations over the green space do not require exemption from the standard operating conditions. Typical flight analysis shows flights either depart the launch area and fly south east across open space between the launch area and Pine Island Road, or exit the launch area to the south-west and fly along the Murrumbidgee corridor before entering Bonython. As a result, CASA does not consider that Wing has operated outside of the conditions applicable in instrument RPAS2017-1748.

Thank you for raising this matter and I trust this information is of assistance.

Yours sincerely

A black rectangular box used to redact the signature of Damian Callachor.

Damian Callachor
Chief of Staff

Attachment D: Copy of letter sent to ACT Government (still unanswered)

Andrea and Nev Sheather
Representing Bonython Against Drones



ACT Government

Andrew Barr MLA
Mick Gentleman MLA

Dear Chief Minister and Minister,

We are attempting to establish who is responsible for dealings concerning drone noise pollution?


Our community action group “Bonython Against Drones” respectfully request action be taken by the ACT Government Environment Protection Agency to our concerns raised about drones (also referred to as remotely piloted aircraft), as we believe it is this agency that has this responsibility!

We have received advice it is not the Civil Aviation Safety Authority, it is not Air Services Australia, nor is it Project Wing who are conducting the drone trial. Therefore, it must be the government agency which is responsible for the residents in the community, and the noise regulations and policy.

We recently received written advice (email 3/10/18 Peter Ryan, Environment Protection Officer) that “under the Environment Protection Regulations 2005 all aircraft noise is exempt and fall under Civil Aviation Safety Authority”. We believe that this advice is incorrect and contrary to what is on the Civil Aviation Safety Authority website and verbal advice provided to our community group.

CASA states

Noise complaints

As the safety regulator, the issue of aircraft (drone) noise is not in our remit. Wing has included some information on the noise drones make on [their website](#) .

<https://www.casa.gov.au/aircraft/standard-page/trial-drone-delivery-systems>.

CASA is the safety regulator, and their role is about safety and writing safety regulations for drones and aircraft. We are also aware that Air Services Australia is the agency who

plays a major role in managing aircraft noise. However, this is only for Australian-administered airspace areas such as major airports. They have stated that they have no role or authority in managing remotely piloted aircraft (drones) noise or operations outside these defined areas. Drones are not included under the Air Services Act 1995.

Airservices has a major role in managing aircraft noise and distributing information about it, while maintaining a focus on safety. Airservices produces [information on aircraft noise and complaints](#). This information is used to inform communities about the impacts of aircraft noise, as well as helping Airservices work with partners to identify ways in which the impacts can be minimised.

Airservices also undertakes periodic reviews of monitoring networks and noise abatement procedures at airports and reports on trials of new procedures.

<http://www.airservicesaustralia.com/publications/noise-reports/noise-reports/>

Furthermore, we have had verbal confirmation that CASA and Air Services Australia met and both agreed that they were NOT responsible for managing drone noise. This was advised to our Community Group.

The company, Wing Australia, who are conducting the drone trial in Bonython (refer to link above from CASA), are also not responsible for managing the noise they create. Their website states.



We have received verbal advice from a drone expert, that the noise pollution emitted by drones should be reported and dealt with by the EPA. Note that the drones appear to fly well under 400 feet as they have to deliver their loads.

We therefore request that you acknowledge your responsibilities and follow up our complaints.

If you disagree with this request, then can you please advise who is responsible for dealing with the noise complaints, including providing us with written confirmation from that authority.

Andrea and Nev Sheather

Representing the Bonython Against Drones Community Action Group.

10/10/2018

Attachment E - ACT government reply to noise complaint 6/1/2019

Dear Andrea and Nev,

Thank you for contacting Access Canberra regarding the commercial drones in Bonython.

Under the Environment Protection Act 2005, The Act does not apply to noise made by a Commonwealth jurisdiction aircraft. Unfortunately, in this matter, Access Canberra and the Environment Protection Authority (EPA) are unable to assist. You will need to contact the Civil Aviation Safety Authority (CASA) to assist you further. Due to CASA being a federal government agency we cannot forward your complaint to them, you will need to lodge your complaint with CASA. Please click on the following link for further information.

www.casa.gov.au/aircraft/landing-page/flying-drones-australia

I apologise that we are unable to assist you any further.

Kind Regards,

Nick | Case Manager

Access Canberra | Complaints Management Team

www.act.gov.au/accesscbr | 132281



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 17

Date Authorised for Publication: 7 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Inquiry into drone delivery system in the ACT
Date: Monday, 28 January 2019 3:55:56 PM

To: The Standing Committee on Economic Development and Tourism

Name: [REDACTED]

Postal address: [REDACTED]

Ph: [REDACTED]

I am writing with regard to the drone delivery systems in the ACT. I spent a weekend with my brother at his residence in Bonython recently. I was appalled at the noise emitted by the drone delivery service, which passes overhead numerous times during the day. The decibel level is in the 80's, and is offensive and disruptive. It interrupted what should have been an enjoyable time outside with family, and could still be heard to an annoying level indoors!

I urge the relevant authorities to end this commercial operation.

Please note that I would like my submission to remain anonymous.

Yours Sincerely

[REDACTED]

Sent from my iPad



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 18

Date Authorised for Publication: 7 February 2019

From: [Frances Warren](#)
To: [LA Committee - EDT](#)
Subject: Drone trial in Bonython
Date: Tuesday, 29 January 2019 8:00:08 AM

lacommitteedt@parliament.act.gov.au
Submission from

Frances Warren



Thank for for the opportunity to make a submission about the drone trial in Bonython.

The terms of reference specifically limit the impact to residents of Bonython, but the area in which the trial was conducted included public land, i.e. Stranger Pond and Pine Island Reserve. This area is frequented by people who want to escape from the whine of motor cars, and enjoy a bush walk or some contemplative time.

At first it was exciting to spot a drone, to feel that we the Canberrans who enjoy the peace of the local bush were witnessing history.

After the first few drones though, it was less enthralling to have the whine of a dentist's drill overhead while enjoying the solitude of the bush.

If we are going to persist in using drones, please ensure that they do not fly over bushland, or parkland, or other areas where people might be seeking peace, such as my backyard. To achieve this, they should be only allowed to use normal traffic routes, where people are not looking for a quiet moment.

We Canberrans treasure our bush capital, so to throw the benefits of it away on a single commercial venture would be madness. It would make me want to stay indoors.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 19

Date Authorised for Publication: 7 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT
Date: Tuesday, 29 January 2019 3:03:35 PM

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	[REDACTED]
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	[REDACTED]

Please note, I would like my submission to remain anonymous.

I am writing to the Inquiry to register my protest at having drones used in suburban areas of Canberra, and at any future drone trials taking place in Canberra.

They are very noisy and disrupt the peaceful bush environment of Canberra. The noise they make it terrible and frightening.

I felt it was an invasion of my privacy as drones constantly flew over my backyard during the trial in Bonython in 2018.

I only had at most two neighbours participating in the trial but the disruption that the deliveries caused to my peace and quite was far greater than would be expected.

I witnessed many times a local magpie trying to swoop a drone as it made deliveries to a neighbour.

I attended a meeting of Bonython residents and complaints of children and pets being upset by the repeated fly overs of the drones; of the delivery of medication to the wrong address and of a drone landing in a residents driveway.

Thank you.

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

29 January 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 20

Date Authorised for Publication: 7 February 2019

From: [Mike Stelzig](#)
To: [LA Committee - EDT](#)
Subject: Submission: Inquiry into drone delivery systems in the ACT
Date: Tuesday, 29 January 2019 4:02:36 PM
Attachments: [image001.png](#)

Dear Committee Secretary

Submission: Inquiry into drone delivery systems in the ACT

I understand from a Canberra Times story published on 29 January 2019 that: *"Wing [a drone operator] has been undertaking extensive community consultation with the Gungahlin community in the past three months..."* I live in Ngunnawal but have heard nothing about a drone company operating or wanting to operate in the Gungahlin area. Ngunnawal is part of Gungahlin. I have not been consulted.

I'd therefore make a submission to this inquiry.

While operating drones may be a federal issue (licensing etc.), Australia has a poor track record of implementing new ideas and technologies. As has been the case with numerous other technologies, which required decades of fine-tuning before becoming viable, drones appear to be another hotly-debated technology where the ACT Government refers such matters to the Federal Government. While some people may be amused by the thought of ordering a coffee or burrito and having it delivered by a drone, at this stage, it appears to be no more than a gag and it is not a safe, economic or an environmentally friendly technology.

I ask the following:

1. Who is responsible should an accident happen (e.g. a drone malfunctions and falls out of the sky or the payload dislodges and falls on someone)?
2. At what times will these drones operate?
3. If this is a viable business option (unless Wing obtain a monopoly), drones from multiple operators will be flying constantly. What technology will ensure that drones do not collide?
4. If drones must not land closer than 30m to a person, where will they land on a typical small Canberra property?
5. How will landing drones affect traffic and pedestrian movements? Is it that a pedestrian must watch out for drones? What safety technology is available to ensure playing children don't engage with and get hurt by a drone?
6. Are there noise implications, for example, how will this affect birds, insects, household pets or even humans?
7. What are the environmental impacts (e.g. the packaging required to deliver a coffee does not appear to be environmentally friendly)?
8. How can we ensure privacy and that drones are not fitted with cameras and other surveillance equipment?

From what I understand, there could be potential for delivering urgently needed medication to remote or difficult-to-get-to locations. Other than that, it would appear absurd to deliver coffees and snacks by a drone. I have not been able to ascertain the cost for using this service but a \$4.50 coffee would certainly no longer cost \$4.50. At a carrying capacity of 1.2kg, this technology is limited.

If this technology were to go ahead, the above questions must be answered. My main concern is **safety**. My understanding is that these unmanned drones will be flown automatically with little supervision and guided by GPS. GPS is not always accurate and this could lead to accidents (<https://store.dji.com/guides/drone-crash/>). Batteries can fail and the payload could be dislodged and fall. Anyone ever hit by a soccer ball in the face may understand that a 1.2kg object falling from the sky can be deadly. I believe that a cricket player died from a cricket ball hitting him in the neck. At 10 metres per second, a 1.2kg heavy object falling from the sky can be deadly.

Below are just a few news stories where drones have caused accidents:

- British toddler Oscar Webb has his right eye sliced in half

(https://www.electronicproducts.com/Aerospace/Aircraft/5_of_the_worst_drone_related_accidents.aspx)

- Drone crashes after operator failed to spot extra building site crane (https://www.theregister.co.uk/2018/01/16/drone_crane_crash/)
- Hawk attacks drone (<https://www.cnet.com/news/this-hawk-has-no-love-for-your-drone>)
- Heathrow plane in near miss with drone (<https://www.bbc.com/news/uk-30369701>)
- Australian triathlete injured after drone crash (<https://www.bbc.com/news/technology-26921504>)
- Drone flying feet above chopper (<https://komonews.com/news/local/helicopter-crew-spots-drone-flying-feet-above-komo-chopper>).

The news articles above provide scenarios that could have been avoided (except for the bird attacking a drone). There must clear, mandatory and enforceable legislation in place regarding drones including compulsory training, oversight by an ACT authority and easily accessible insurance schemes for victims should an accident happen. Operators of drones must be skilled and comply with strict aviation rules as well as implement safety systems to avoid above tragedies. To refer to the Federal Government is not sufficient. May I suggest that similar drone laws are adopted throughout all states and territories?

I don't have all the answers for you but at this stage safety, privacy and the environment far outweigh any potential benefits of drones unless they are used in more altruistic emergency scenarios, such as the delivery of urgent medication in difficult to reach areas.

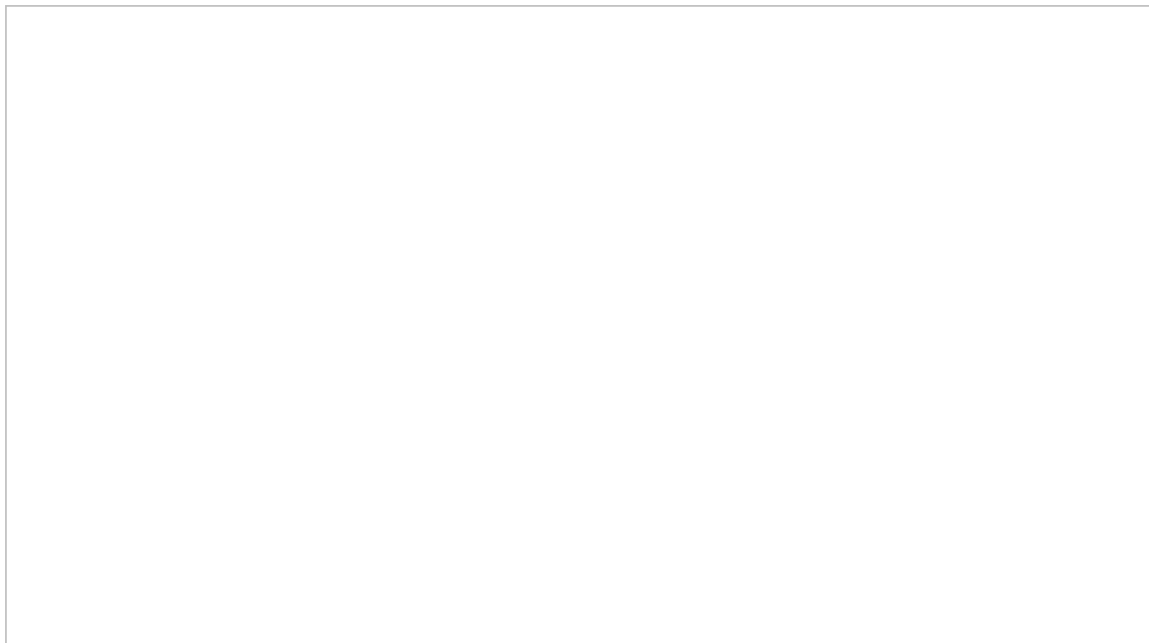
Happy to discuss.

Kind regards

Mike Stelzig



Image of Oscar Webb less one eye





LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 21

Date Authorised for Publication: 7 February 2019

From: [Richard Strudwick](#)
To: [LA Committee - EDT](#)
Subject: Drone Deliveries
Date: Tuesday, 29 January 2019 5:06:17 PM

Dear Sir/Madam,

I live on the north side of Stranger Hill in Bonython and was exposed to the annoying sound of drones during the recent trials. I fail to see how these aircraft are a positive development when used for frivolous purposes such as the delivery of burritos within suburban areas. I can see use for these aircraft for such purposes as the the delivery of medicines to infirm people but that's about it. We are constantly being assailed by unwanted noise such as that being generated by the increasing number of koel birds in Canberra and exhaust noise from motor vehicles that exceeds the regulated standard. In the latter case I guess the police force in this town reckon they have more important things to do than pulling over Harley-Davidsons and running a decibel meter over them. I understand that the Wing company are attempting to reduce the noise levels on their machines but I bet that they are developing plans to deploy larger machines with greater range/payload and that will cause increasing problems due to potential mechanical failures.

sincerely,

Richard Strudwick



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 22

Date Authorised for Publication: 7 February 2019

From: [Rachel Peddle](#)
To: [LA Committee - EDT](#)
Subject: Re my opinion on drones
Date: Wednesday, 30 January 2019 5:03:16 PM

As in so many things in life these drones can be used for good or for bad, I am concerned about the bad it gives thieves the opportunity to check out peoples premises, It gives the opportunity of spying on people or violent ex-husbands to spy on their ex wives. But then it can be used to locate someone lost or to drop food to people. I personally feel they should only be used by professional people and used only for good.

Rachel Peddle



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 23

Date Authorised for Publication: 7 February 2019

From: [Janne Chamberlain](#)
To: [LA Committee - EDT](#)
Subject: DRONE DELIVERY SYSTEM IN THE ACT
Date: Wednesday, 30 January 2019 7:28:06 PM

I take the opportunity to register my disgust at the use of drones in Bonython. I downsized and moved to this suburb four years ago looking forward to a quiet retirement in my final years. I find the noise of drones intrusive both outside and inside my home. I understand that some people use these drones to get medication from pharmacies etc but the majority are used to deliver coffee and burritos to homes where people have too much money and are too lazy to get off their fat arses and go to a café. If I knew that these drones were to be trialled here I would have moved to another suburb or indeed outside of the ACT.

Regards

M.J. Chamberlain
[Bonython](#)



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 24

Date Authorised for Publication: 7 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Standing Committee on Economic Development and Tourism - Inquiry into Drone Delivery System in the ACT
Date: Thursday, 31 January 2019 12:05:16 AM

[REDACTED]

Following is my submission into the above inquiry.

Just because something can be done doesn't mean it should. While there is no doubt a role for drones in eg military and agricultural situations, drones should not be permitted to be used to deliver products to households across the ACT. The costs to the public at large, particularly those living in the drone flight path far outweigh the benefits to the much lesser number of residents receiving deliveries and the few companies profiting from their use.

From my own experience, both of the trial in Bonython and of drones flying overhead when walking around the lake near the golf course at Yarralumla, they are highly intrusive and exceptionally annoying, being very loud, high pitched (much more annoying than lawn mowers) and visually distracting. If drone delivery becomes more widespread, this will be even more of a noise pollution issue than at present. Drones fly at low altitude over people's back gardens, which should be a haven of privacy. If drones have cameras attached, the invasion of privacy is even greater and in breach of the fundamental right to that privacy.

While some people claim drones don't differ from lawn mowers in their impact, which I disagree with, a key difference is that lawns need to be mowed to keep them down and prevent unsightly fire hazards which harbour snakes etc. There are no other feasible alternatives for keeping grass short. Food, pharmaceutical and other deliveries can be and are already delivered at low cost by small cars, motorbikes, scooters etc which are much less intrusive than drones and also provide employment for delivery drivers, often young people such as students. Deliveries using the traditional means benefit those receiving the delivery but don't adversely impact on others not receiving the delivery.

The impact on birds and wildlife is not fully known but it would be unlikely to be positive, again becoming a bigger problem if drone deliveries significantly increase. Drones flying over back yards is likely to upset some dogs, with resultant barking that again adds to their noise pollution impact

I am unaware of the incidence of failures of delivery drones mid-flight, dropping their loads or crashing to earth, but no doubt this sometimes happens. Who is responsible for any adverse consequences? If a drone crashes into someone's back yard what, if any, are the resident's responsibilities and rights? Are there restrictions on the types of prescription medications that can be delivered by drones, in case they fall into the wrong hands or become targets of those who deal in certain prescription pain medications? To allow drone deliveries without introducing some form of regulation that takes account of these and undoubtedly many more issues is irresponsible. These issues exist regardless of whether the noise levels of drones are reduced.

There are many opportunities for commercial enterprises to develop beneficial uses for

drones that benefit society without adversely impacting on the population at large, including as mentioned above, agricultural and military, or perhaps in assisting in search and rescue missions. They should be encouraged to do so but not be allowed to use drones for deliveries in built up suburban areas where the costs to many far outweigh the benefits to a few.

I would appreciate acknowledgement of receipt of my submission.

Thanks and kind regards

A solid black rectangular box used to redact the signature of the sender.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 25

Date Authorised for Publication: 7 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: Inquiry into drone delivery systems in the ACT

Personal Details:

Name:	William James Boettcher
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email:	[REDACTED]

To members of the Standing Committee on Economic Development and Tourism,

I have a strong objection to the ongoing drone delivery trial in Bonython, ACT. My primary objections both relate to the term of reference (1) (d) “the extent of any environmental impact as a result of trialling drone delivery technology on” (i) “residents within the trial area”.

Although I live in Watson, my girlfriend lives in Bonython and I’ve experienced firsthand these drones flying overhead on numerous occasions. I find them highly invasive in two regards:

- i) Privacy. These drones are constantly recording video footage as they fly over residents’ backyards. I find this to be an outrageous invasion of privacy. I have two young nieces and on hot summer days they run naked under the sprinkler in their backyard. Their backyard has privacy from neighbours due to the dense shrubbery surrounding, however from directly above a drone would have full view of them. As per my understanding of privacy laws, it’s illegal to photograph someone in their own backyard if they are naked (source: <https://www.abc.net.au/news/2018-04-16/what-law-says-about-taking-photos-of-people-in-public/9641488>). Why are delivery drones exempt from these privacy laws?

Regardless of legalities, there’s no way I’d let young kids play naked in my backyard if I was in a suburb with footage-recording drones flying overhead. The day when siblings can no longer play unclad in their own backyard due to fears of being photographed by a predator monitoring the video feed from an overhead delivery drone would be a sad day indeed.
- ii) Noise pollution. I have never heard a more invasive sound in residential areas than these delivery drones flying overhead. The noise precludes all conversation and is indescribably piercing and stressful. To members of the committee reading this who haven’t experienced it firsthand: I implore you to go to Bonython and hear for yourselves just how invasive the noise of these delivery drones flying directly overhead is.

In summary, I ask that this committee weigh up the benefit of quick fast-food delivery for the select few residents participating in this trial against the detriment of the invasion of privacy and noise pollution experienced by every resident in drone-delivery affected areas. Are suburban drone deliveries really for the greater good of the community?

Kind regards,

William Boettcher
01 February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 26

Date Authorised for Publication: 7 February 2019

VIA E-MAIL:

Standing Committee on Economic Development and Tourism

Email : LACommitteeEDT@parliament.act.gov.au

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

To: The Committee on Economic Development and Tourism

I wish to lodge my strong objection to the use of drones in suburban Canberra.

I am concerned with the Noise pollution and the loss of Privacy.

The absurdity of delivering coffee and pizza flies in the face of ACT Health warnings that people should be encouraged to get mobile, get off their couches and use the fantastic walking and cycling paths.

Yours sincerely

Marilyn Ralston

[REDACTED]



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 27

Date Authorised for Publication: 7 February 2019

Email : LACommitteeEDT@parliament.act.gov.au

Standing Committee on Economic Development and Tourism



STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	[REDACTED]
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	[REDACTED]

Please note, I would like my submission to remain anonymous.

I am writing to the Inquiry to voice my concerns over the drone delivery trial. Every weekend when I am trying to sleep (following a hard week at work), the drones are so loud, I get woken up. All because some lazy person can't go 1km down to Southpoint Tuggeranong and order their coffee like normal people.

I am all for technology, but this is a blatant misuse of drones under the guise of "deliveries", when it is really about unfair market takeover, data gathering and developing their navigation systems.

I am also annoyed that the ACT government has done nothing to protect my privacy. Wing is a subsidiary of Google. I don't appreciate the drones flying over and taking pictures with their cameras and sending the data back to US. Google was just reported as breaking antitrust law and hit with a \$2.7 billion fine for have a price-comparison feature built into the company's search engine. You expect me to believe that Wing will keep the data safe?

Thank you.

[REDACTED]

January 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 28

Date Authorised for Publication: 7 February 2019

Email : LACommitteeEDT@parliament.act.gov.au

Standing Committee on Economic Development and Tourism



STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	[REDACTED]
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	

Please note, I would like my submission to remain anonymous.

The drones in Bonython are a bloody nuisance. When I stay at my girlfriends parent's place, after working late shifts (8 pm to 4am), I can't sleep in because the stupid things are so noisy they wake me up. I have had to resort to wearing ear plugs to block out the noise.

I hate to think of how many other people like myself can't have a sleep in. I work hard and long hours – this sort of trial is totally unnecessary. If people want a coffee, go 5 minutes down the road to the local shops like normal people. We have a right to peace.

Thank you.

[REDACTED]

[REDACTED]

January 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 29

Date Authorised for Publication: 7 February 2019

Email : LACommitteeEDT@parliament.act.gov.au
Standing Committee on Economic Development and Tourism



STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	[REDACTED]
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	[REDACTED]

Please note, I would like my submission to remain anonymous.

I have a number of concerns about the drone delivery trial. They are:

- Noise – they are very loud. When I visit my parent in Bonython, I feel sorry for them having to put up with the drones. They are even worse than the cars that screech around my streets in Chisholm.
- Privacy – you can't even have a quiet BBQ in the backyard without the stupid things flying over head and taking pictures.
- Dogs – every time they fly over they make all the dogs start barking.
- Birds – my parents have a lovely garden and bird feeders out. Even I, as a visitor have noticed the decline in the birds coming and especially at Stranger Pond. The drones have frightened them all away.
- Upsets people – I know my parents are upset about them, but I also have lots of friends in Bonython who just hate them.

Thank you.

[REDACTED]

January 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 30

Date Authorised for Publication: 7 February 2019

Email : LACommitteeEDT@parliament.act.gov.au
Standing Committee on Economic Development and Tourism



STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	[REDACTED]
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	

Please note, I would like my submission to remain anonymous.

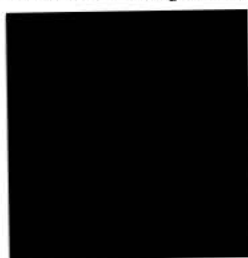
I have a hobby drone which I fly. When I got it, I read up on all the rules to make sure I did the correct thing and flew it away from people.

I've seen the drones that deliver coffees and burritos in Bonython. They are big mother suckers and 20 times larger than my hobby drone. They are also 20 times louder. It shouldn't be allowed, and flying them over peoples home is really wrong. I wouldn't trust them and I can understand why people want to shoot them out of the sky.

Wing are really giving a bad name and reputation to drones.

My advice to you – get rid of the stupid things, I would rather have the postie anyday.

[REDACTED]
January 2019





LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 31

Date Authorised for Publication: 7 February 2019

From: [Moreen Dee](#)
To: [LA Committee - EDT](#)
Subject: PARLIAMENTARY INQUIRY: DRONE DELIVERY SYSTEM
Date: Saturday, 2 February 2019 1:11:59 PM

Parliamentary Inquiry,

I live in [REDACTED] Bonython, seemingly a predominant route for the drone delivery system being trialled in the area.

I would like to advise you that the drones really cause me concerns because of:

(1) the invasion of my privacy. I am a keen gardener and I feel quite vulnerable when working outside and having the drones flying (and filming) back and forth as I work alone in the garden. This was particularly invasive over the weekends during the period before Christmas.

(2) the incessant noise they create which becomes quite frightening when they come quite close up behind you, flying low, as you walk down the driveway, for example. Like myself, there are many pensioners in this area and the sudden loud noise coming close behind you could result in a nasty fall as this is a hilly area.

(3) the disappearance of the bird population. Not long after the trial started I noticed that the smaller birds usually enjoying my garden had disappeared. As the trial progressed, the numbers of some of the medium-sized birds (parrots, etc.) also began to reduce. I understand that a significant magpie family that have nested in the trees along the top of Don Dunstan Drive has reduced to around 30% of its usual numbers. Currently in my garden, in the absence of the drones, a number of parrots have returned but I fear for their demise should the drones become a fixture.

Thanking you for your attention

Dr Moreen Dee

[REDACTED]

Bonython ACT 2905



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 32

Date Authorised for Publication: 7 February 2019

From: [R Taylor](#)
To: [LA Committee - EDT](#)
Subject: Inquiry into drone delivery systems
Date: Saturday, 2 February 2019 4:01:17 PM

Hi,
My submission for this enquiry is very simple. I do not, under any circumstances, support the idea of drone deliveries in my neighbourhood.

Thank you,

Rod Taylor





LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 33

Date Authorised for Publication: 7 February 2019

Submission: The Standing Committee on Economic Development and Tourism -
Inquiry into Drone Delivery Systems in the ACT

From Greg Marks

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

The Chair

Please find below my submission to this Inquiry

Introduction

My submission is addressed primarily to Term of Reference 1 (d) (i), viz "the extent of any environmental impact as a result of trialling drone delivery technology on:

- (i) residents within the trial area;"

As the Terms of Reference seem to be mainly concerned with the likely economic benefits of drones, and regulatory aspects, there does not seem to be a lot of priority accorded to the views of ordinary Canberrans. I am assuming that 'environmental' in this Term of Reference can be interpreted quite widely. I am also assuming that because one does not reside in the trial area, a resident of Canberra is not precluded from commenting on the likely environmental impact given that the trial may turn into a permanent and Canberra-wide arrangement.

I would also point out by way of introduction that the legal situation in respect of the impact of drones on air space may be somewhat fraught. I am not a lawyer myself, but understand that there has been litigation overseas over nuisance and compensation regarding effects of noise etc from low flying aircraft. I would suggest that such issues, and relevant legislation and litigation, not just in Australia but in comparable jurisdictions, should be carefully examined as a matter of prudence before any final approvals are forthcoming.

Term of Reference 1 (d)(i)

There is a presumption of the quiet enjoyment of one's property. This may not be absolute, but it is a keystone to our system of democratic rights. Where an initiative may be deleterious to that right of quiet enjoyment, there would need to be a strong countervailing reason for proceeding. The interests of a private company as such would not appear sufficient.

In the case of drones, the environmental impact on residents appear to be potentially significant in terms of noise, possible accident, loss of privacy, and pollution.

There is no doubt that drones are disturbing to that quiet enjoyment of one's property that I have mentioned. They are a nuisance. They will potentially impact on health through noise and irritation, through a fairly gross invasion of privacy, by concern over safety and accidents, by their disturbing impact on children and pets. They will potentially elevate feelings of stress and anxiety. Further, they will be alienating in that ordinary citizens will feel that their rights are lesser than private commercial interests.

Conclusion

I must admit that I am surprised this proposal has got as far as it has. I believe that a common sense approach would deem drones as inappropriate in residential areas.

It does appear to me that the effect on residents overall will be significantly detrimental. I suggest that either the further trial not go ahead (my preferred option), or that if it does go ahead it be restricted to non-residential areas (industrial, perhaps commercial).

Lastly, the current fetish for innovation in Canberra is not an unqualified good. At times it verges on the naive. The rapid growth of Canberra is creating many problems, and may be reaching its sustainable limits. The ACT does not need this particular innovation, with its attendant risks and problems, and very many residents would be glad if it were not to proceed.

G Marks

2 February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 34

Date Authorised for Publication: 7 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Submission to drone inquiry
Date: Sunday, 3 February 2019 10:43:52 PM

To the Committee,

I wish to lodge my objection to the use of drone delivery systems in the ACT for the following reasons.

I am living on my own in Coombs after having to leave a physically threatening and violent home environment.

I value my safety and privacy, but have felt threatened and frightened by drones flying over my house, although I have no way of knowing who was using this equipment. The suddenness of the noise and sight of drones flying so low over my private space made me feel extremely fearful and apprehensive.

I ask that this drone delivery system be prevented from continuing, in the interests of safety, privacy, noise impact and in my case, to alleviate the fear that I have of drones being used to check out my living environment. I need to feel safe in my own home.

[REDACTED]
[REDACTED]
[REDACTED]



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 35

Date Authorised for Publication: 7 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Drone delivery submission
Date: Monday, 4 February 2019 12:22:02 PM

To whom it may concern,

I strongly object to the proposal for drone deliveries within Canberra.

While it may have benefits to rural, remote & difficult to access areas, there are too many negative aspects to deliveries within the suburban & city environment.

Namely, noise & visual pollution, invasion of privacy, risks (real & perceived) to persons & property, & potential conflict with construction activities such as concrete pump & crane operations as well as tree surgery works.

yours faithfully

Paul Barisic-Bentley

[REDACTED]



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 36

Date Authorised for Publication: 7 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	Rodney Turner
Postal Address:	
Phone:	
Email: (if applicable)	

Optional:

How long you have lived in the area:	6 years
Occupation:	Public Servant
Any other background information:	

I am writing to the Inquiry as a resident of Bonython who has been impacted by the drone delivery systems during the trial period.

I would like to comment on the following terms of reference:

The extent of any environmental impact as a result of trialling drone delivery technology on;

- Residents within the trial area
- Native wildlife
- Domestic animals

Initially I was very excited about the benefits that this trial would bring to Bonython and signed up for the service. My family of four (including two adult children) were early adopters and arranged to have some goods delivered. However, the initial excitement soon turned to horror when we all realised the high level of noise that comes from each of these deliveries as you hear them come, dispatch and leave. The noise levels are frighteningly loud easily heard from inside your home and is really annoying when you are trying to spend time in your backyard or walking around your neighbourhood.

Our home initially was on the flight path for every delivery across Bonython and the peace we once enjoyed in our area close to Stranger Pond was stolen from us, the noise was piercing and bothersome.

I am of the firm belief that any benefits are outweighed by the noise and adverse impacts they have on our bird life and domestic animals. We have a terrier dog and she would bark constantly when they flew over.

I believe people who advocate this service who have not lived under its flightpath, should be subjected a trial of it over their suburbs, I can assure you they would quickly change their minds and this includes some of our politicians.

This service needs to be fully investigated before we see it broadly extended across Canberra. The current drones are far too noisy and unless this is addressed and they are made to be quiet more residents of Canberra will join anti-drone groups.

Canberra is a relatively quiet bush capital, and now our only consolation in Bonython is that the trial has finally ended and we will have peace again.

Thank you for the opportunity to put my view forward



Rodney Turner

4 February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 37

Date Authorised for Publication: 7 February 2019

To the Committee Secretary
SANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
GPO Box 1020, CANBERRA CITY ACT 2601

Submission to the Inquiry into drone delivery system in the ACT.

Personal Details:

Name:	Elizabeth Dean and Norman Collings
Postal Address:	████████████████████
Phone:	████████

Background information

We purchased our property in Bonython in 2004. One reason for choosing the suburb was the peaceful nature of the suburb with little or no through traffic. We chose a house in a short cul de sac so there is no through traffic and, with only ten houses, very little traffic at all. We chose a house with a large garden planted with natives because we enjoy watching the birds that come into our garden and listening to them.

Our house appears to be on the flight path to some houses receiving deliveries. Drones have flown over our house on numerous occasions. Mayfield Hill is next to Stranger Hill, which is bushland. The drones appear over Stranger Hill and then fly either across our back garden or across the front of the house depending where the delivery is being made.

We are both retired – ex government. We have only lay mans' knowledge of drone technology and have no issue with drones used for certain purposes. The issues we document below relate to the use of drones for the purposes they are being used in Bonython. We would like to be clear that use for emergency surveillance, deliveries in outback or remote areas and used for medical purposes (e.g. delivery of blood and vaccines) is not something we oppose.

Addressing selected Terms of reference of the Inquiry

1. (a) the decision to base the trials of the technology in the ACT and surrounding region;

We are not aware of any community consultation or transparency on the selection of Bonython for the trial prior to the decision to hold the trial by the ACT Government, any ACT or Federal Agency or by Wing. We first heard about the trial from a neighbour who said there was to be a meeting called by Wing at the Tuggeranong Vikings Club. We attended along with about five other people. The Wing representatives explained the trial as a definite go ahead and showed us a drone. We were surprised how large the drones were. We raised issues e.g. would it be safe to fly such large drones over residential areas and, on hearing cameras would be filming, we raised issues of privacy. The Wing representatives listened but it was obvious to us that they considered the evening an 'information session' because the trial had already received Government approval.

Fearing we residents had missed an opportunity from the ACT Government to comment on the trial we sought information. We were disturbed to discover there had not been, and was not going to be any Government consultation with residents on the trial. We further found that there had been no community consultation on the use of bushland adjacent to Pine Island Reserve to use as a launch pad and food preparation area.

We were further disturbed to hear from Royalla residents that the Royalla community had been divided by the trial that had already taken place there. Some Royalla residents did not agree it was the success promoted by Wing.

Once the trial began we wished to draw our now real concerns to the Government agency responsible. However, we were thwarted. Queries to ACT Police on drone flights across our property were referred to Air Services Australia and from Air Services Australia to CASA. CASA responded that its remit was safety only – any other issues such as privacy or noise would not be a concern of that organisation. Emails to the responsible Minister received no response or the response failed to answer the issues raised.

In summary, the decision to base the trials in Bonython seems to have been made without any consultation with, or regard to, the views of the residents.

1 (b) the economic impact of drone delivery technology being tested in the ACT including the:

- *(i) investment that has been brought in to the Territory;*
- *(ii) number of jobs that have been created as part of the trial; and*
- *(iii) extent of collaboration with local industry and academic institutions;*

There have been claims in the press made by the Government that the drone delivery technology will lead to increased investment in the ACT and increased jobs. We have received no substantiation of this and fail to see how coffee deliveries could be economical. We suspect that the trial is to develop air traffic control software for drones. If this was the true reason and we had been advised of such, we might have been more understanding. However, coffee, food and chemist items delivery in a suburb so close to shops and coffee bars surely cannot be economical and could lead to a reduction in employment especially for young people in coffee bars and home delivery businesses.

1 (c) the extent of regulatory oversight of drone technology at various levels of government including but not limited to:

- *(i) local authorities such as the Environment Protection Authority, Worksafe and Access Canberra; and*
- *(ii) Commonwealth agencies such as Air Services Australia and Civil Aviation Safety Authority;*

Our advice from the ACT Government as to whether the Government was assessing the outcomes of the trial was that Wing is self-regulating and will report to the Government. This does not seem to have any measure of independent review of the trial. It is an abrogation of responsibility of our local government. From our attempts to find information from agencies it appears to us that none accept any responsibility for the effects the trial may have on any issues.

1 (d) the extent of any environmental impact as a result of trialling drone delivery technology on:

- *(i) residents within the trial area;*

Loss of privacy

The environmental impact on us has included the loss of the right to have privacy in our own back yard because:

- The drones fly over our back yard,

- The drones take photographs and store them off shore, and
- The drones could belong to an unauthorised enterprise possibly carrying out unauthorised or illegal activities.

Wing advised us that the drones take photos to be able to retrace their path in the case of the failure of other navigation systems and that the photos are kept for 30 days for research if required following a flight.

Where are the photos stored? Who in the ACT Government or Federal Government is monitoring what images are kept, where they are being stored and when and whether they are being deleted?

We have concerns that we are not qualified to recognise a Wing drone compared with other commercial drones or recreational drones. How do we identify whether our privacy is being intruded upon by a rogue drone crossing our property illegally?

Environment impact of undue noise

Bonython is a quiet suburb. Our street is particularly quiet except for mild traffic noise from Drakeford Drive which we knew about when we purchased the property. The impact of drone noise in horizontal flight is almost bearable, akin to the noise of an electric whippersnapper. However, the noise in hover/delivery mode is extremely piercing, irritating and even worse if it is windy and the 12 vertical lift motors have to rev differentially to maintain horizontal stability.

Our household has been extremely lucky in that there are no adjacent neighbours who are receiving deliveries. However, there are approximately 4 residents in the vicinity (estimated to be within 200~300 metres of our house) who frequently receive deliveries. We are therefore subject to frequent fly overs and then the scream of the drones as they hover and deliver. It would be very distressing if our immediate neighbours were part of the trial.

Unlike traffic noise, the drones' noises are unpredictable and unexpected.

We suggest the ACT Government or a Federal agency conduct research into the noise levels of drones in otherwise peaceful suburbia.

Dividing the Bonython community

There has been impact on the social environment in our Bonython community. During the trial the community became divided between those taking part in the trial and those opposed to it. It created disharmony amongst neighbours, and it made social interaction difficult at various social and charity club meetings when the individual views clashed.

We suggest the ACT Government assess the impact of new technology on the communities affected.

- *(ii) native wildlife;*

Many residents, as we did, selected this suburb in which to purchase real estate because of its proximity to open nature land, the Murrumbidgee corridor and the wildlife in these areas. The trial flights of drones ruined some of our walks and bicycle rides.

We observed that the drone flights had a negative impact on the small birds such as black birds, sparrows, silvereyes and pardalotes with only the larger birds remaining in our garden. We have no resources to obtain data on this. However, it seems more than a coincidence.

Wing have claimed that there were no incidents of drones impacting wildlife, however there is at least one video on social media of a magpie attacking a drone during a Bonython trial delivery.

We would suggest that the ACT Government undertake research into the impact of drone flights on native wildlife.

- *(iii) domestic animals;*

We do not have pets. However, we have noticed that two dogs in a neighbour's property seem to bark more often and for longer on days when there are frequent drone flights. We have no data to support this.

We suggest that the ACT Government carry out research into whether drone flights would cause distress or alarm to domestic pets.

- *(iv) greenhouse gas emissions;*

We suggest that the ACT Government assess this important aspect.

1. (e) ways to improve the use of drone delivery technology within the ACT;

We would like to emphasize that we are not against the development of drone technology for valid reasons for example:

- Transport of blood to hospitals as is happening in Namibia,
- The transport of vaccines as is being trialled in Vanuatu,
- Observing fire fronts during bush fires,
- Dropping survival packs to lost hikers or sailors, and
- Overcoming the tyranny of distance for rural dwellers.

We are regularly under air ambulance and firefighting helicopter paths and we can accept the noise and disruption from these flights because it is a proven and appropriate use of that technology for the general benefit of the community.

1. (f) any other relevant matter;

Safety

There would appear to be issues that affect the safety of residents for example:

- A drone carrying hot coffee or hot food could potentially drop the product on someone below (dropped hot drinks in Bonython have been shown on Facebook),
- A drone carrying chemist items could drop them and potentially affect the health of a child or animal, and
- The drone could distract a car driver, pedestrian or cyclist and thereby cause an accident.

We suggest that the ACT Government examine this issue.

Concerns about the future

The futurists are telling us that the skies will be crowded with delivery drones.

With the lack of Territory and Federal Government control and consultation evident from the trial, future use raises concerns. Will there be any upper limit on the number of companies that can fly drones in a suburb? If there is a licensing or similar scheme, how will we residents know if it is a licensed drone? Who will monitor noise and safety issues?

In light of the issues raised by Bonython residents we suggest that the ACT Government:

- withhold/cease any rights for Wing to fly drones in Canberra's northern suburbs until all the issues have been solved
- the ACT Government works with the agencies responsible for matters outside the remit of ACT Government to resolve issues and
- the ACT Government establishes a clear line of communication with ACT residents to receive and respond to any issues raised.

In conclusion

- The drones are intrusive on our privacy in our own backyard
- The drones are noisy
- The drones potentially have a negative impact on local wildlife
- The drones diminish the enjoyment of the nature reserves adjacent to this suburb
- The drones affect the wellbeing and safety of a large number of residents by flying over properties to deliver non-essential items to a small number of residents
- The current trial has shown the apparent ineptitude of the ACT Government in managing either drone issues or the various responsibilities of different agencies that appear to be involved and
- The current trial has considerably reduced our confidence that the ACT Government will listen and communicate on future issues that disturb residents and may impact on the way residents vote in future local elections.

We appreciate the opportunity to provide our comments to the ACT Government on this matter and look forward to receiving the outcomes of the Inquiry.

We attach below examples of the correspondence between us and Wing and local and federal agencies/governments. As you will read, much of the response was not helpful or informative.

VIA E-MAIL:

Standing Committee on Economic Development and Tourism

Email : LACommitteeEDT@parliament.act.gov.au

Examples of Correspondence.

EMAIL TO WING

Subject:

MAJOR SAFETY CONCERN

From:

Norman Collings [REDACTED]

Date:

12-Oct-18, 14:11

To:

wing-au@x.team

CC:

stopbondrones@gmail.com, environment.protection@act.gov.au, letters.editor@canberratimes.com.au, news@canberraweekly.com.au, barr@act.gov.au, gentleman@act.gov.au, burch@act.gov.au, lawder@parliament.act.gov.au, lecouteur@parliament.act.gov.au, rattenbury@act.gov.au, simon.denby@casa.gov.au, gai.brodtmann.mp@aph.gov.au, info@tuggcc.com

Hello,

I am contacting you for two reasons: 1. to allow me to express my disapproval of your drone project in my suburb, and 2. to give you feed back on what I see as a safety issue to humans, animals, property and birds.

Your drones are noisy, invade my privacy, ruin my suburban peace (for which I have paid a high real estate price) and totally unnecessary for the current role for which they are being used. I have not kept statistics on the repetitive fly overs, but it is an increasingly annoying happening.

This morning between 12:45 and 13.45 there were two noisy fly overs followed by the usual increased noisy hover to deliver. The safety issue is that on both occasions, having made the delivery, the return flight commenced with the winch cable not fully retracted. If this brought about the demise of your drones I would be pleased, except that the failing drone might damage humans, animals or property on the ground. The other issue I have is that a bird, attacking one of your drones, might get entangled in the non retracted winch cable or be damaged by the drone itself.

A company of your international size and status should have a more responsible attitude to the society in which you are operating.

Please advise me of what actions you are taking to address all of these important issues.

Regards,

Norm Collings

[REDACTED]

REPLY FROM WING

Subject:

RE: [4-3832000023762] MAJOR SAFETY CONCERN

From:

wing-au@google.com

Date:

18-Oct-18, 08:15

To: Norman Collings [REDACTED]

Dear Norm,

Thank you for reaching out with feedback. We've noted your opposition to the trial, and your concerns about noise and safety. To speak to the specific issue you raised

about the drone starting its trip back to our trial operations area with the winch cable not fully retracted, what you witnessed is by design. We designed the return flight to begin as soon as possible after delivery, while the cable is retracting. This reduces the time the drone is hovering and reduces noise. We do this in areas of Bonython where we know it is safe - where there are no trees, power lines, or fixed structures. The cable is secure and strong enough to deliver packages, but it's also very lightweight, and designed to release from the drone in case of tension on the cable (such as from an obstacle). In the tens of thousands of flights we've flown, we've never had an encounter with a bird. We've worked with independent environmental experts and have followed their advice in operating to avoid disturbing birds, or encountering birds (the rate at which we accelerate, the height at which we fly, even the colour of our drone is designed to avoid this scenario). If it were to occur, we've designed the drone's safety mechanisms to prevent damage to the bird or the drone. If you have additional questions, please don't hesitate to reach out again.

Thank you,

Jesse

The Wing Team

REPLY FROM SHANE RATTENBURY MLA

Subject: RE: MAJOR SAFETY CONCERN

From: RATTENBURY <RATTENBURY@act.gov.au>

Date: 12-Oct-18, 16:46

To: Norman Collings [REDACTED]

CC: LE COUTEUR <LECOUTEUR@parliament.act.gov.au>

Good Afternoon,

Thank you for contacting the ACT Greens regarding your concerns about the drone Trial in Bonython. Noting the significant community concerns that we have received, Mr Rattenbury has written to the responsible Minister, Minister Gentleman asking how the government intends to address these concerns. A copy of Mr Rattenbury's letter is attached for your records.

Thank you for contacting the ACT Greens on this issue.

Kind Regards,

[REDACTED] | Office of Shane Rattenbury MLA

ACT Greens Member for Kurrajong

Minister for Climate Change and Sustainability; Minister for Justice, Consumer Affairs and Road Safety;

Minister for Corrections; Minister for Mental Health

[REDACTED] | rattenbury@act.gov.au

Follow Shane on Facebook and Twitter

I acknowledge the Traditional Custodians of the Australian Capital Territory and across Australia, and pay respects to their Elders, past, present and future

LETTER ATTACHED TO EMAIL FROM SHANE RATTENBURY MLA



Shane Rattenbury MLA
ACT Greens Member for Kurrajong

Mr Mick Gentleman MLA
Minister for Planning and Land Management
ACT Legislative Assembly
London Circuit
CANBERRA ACT 2601

Dear Minister, *Mick*

Bonython drone trial

I have received constituent representation about the trial of drones in Bonython.

Some residents are concerned by issues related to the drones. These issues include:

- The noise emitted by the drones is disturbing.
- Privacy concerns related to the drones recording visual data. How is this data used and stored? Are best practice privacy principles being followed?
- The drones may be interfering with wildlife.
- No consultation occurred with residents about the drone trial.

I would appreciate if you could provide me with a response to these concerns. I would also appreciate further information about the trial, such as how long it will run, and future plans for the service.

Thank you for your consideration of these matters.

Yours sincerely

Shane Rattenbury
ACT Greens MLA for Kurrajong
9 October 2018

Ph: 6205 0005 Fax: 6205 0007 Email: Rattenbury@act.gov.au
Post: GPO Box 1020, Canberra, ACT 2601 Online: Follow me on [Facebook](#) and [Twitter](#)

There was no response from Shane Rattenbury with Mick Gentleman's response.

REPLY FROM CASA

Subject: FW: MAJOR SAFETY CONCERN [SEC=UNCLASSIFIED] CRM:01566529

From: RPAS Mailbox <rpas@casa.gov.au>

Date: 15-Oct-18, 09:52

To:

Hello,

Thank you for your recent correspondence to CASA where you state you are concerned about drone noise associated with the operations of 'Wing' aircraft in Bonython, ACT. CASA takes all matters relating to aviation seriously, however our remit is limited only to the safe and legal operation of the aviation system and does not extend to issues of noise.

Airservices Australia is responsible for managing complaints and enquiries about aircraft noise, more information on which can be found

here: <http://www.airservicesaustralia.com/aircraftnoise/about-making-a-complaint/>

As your correspondence refers to 'Wing', I can inform you that Wing have been testing drone delivery in Australia over the past several years with the necessary safety approvals from CASA. Wing was required to satisfy CASA that its operation met an acceptable level of safety before CASA permitted Wing to conduct operations in

Bonython. Wing must also continue to operate within CASA's requirements for commercial drone operators flying over 2kg.

At this point CASA has not put an end date on the operations in Bonython, however you may wish to speak with the ACT Government to check if they have placed an end date on the lease of the land in Greenway.

Should you or your members want to report unsafe drone operations, you may do so on CASA's website <https://www.casa.gov.au/webform/report-unsafe-drone-operations> If you or your members observe unsafe aviation operations that are an immediate risk to life, telephone 000 or contact your local police.

Yours Sincerely

CASA RPAS

Note: When emailing CASA please ensure you include the following:

..If you are not a certified operator please advise the category you are operating under (if known)

..If you are emailing in relation to an existing job can you please include the job number, name of your organisation and ARN number in the Subject line of your email

..If you are a certified operator can you please include the name of your organisation and your ARN number in the Subject line of your email

Kind regards

Remotely Piloted Aircraft Systems (RPAS) Operations

RPAS Branch - Administration Officer

National Operations & Standards

CASA\Aviation Group

MY REPLY TO CASA

Subject: Re: FW: MAJOR SAFETY CONCERN [SEC=UNCLASSIFIED] CRM:01566529

From:Norman Collings [REDACTED]

Date:15-Oct-18, 10:13

To:RPAS Mailbox <rpas@casa.gov.au>

CC:stopbondrones@gmail.com

Hello CASA RPAS,

I understand that drone noise is not within your remit.

However included in my email I expressed my concern about a safety issue which I believe is within your remit.

I would appreciate your response to the fact that Wing drones commence return flights with about a metre of winch cable dragging beneath the craft. This is a danger should it get entangled in trees or shrubs and also a potential risk to bird life attacking the drone. A drone failing/falling could damage property, people and animals on the ground.

I look forward to your positive response on this issue,

Thank you in advance

Norm Collings
[REDACTED]

THE LAST AND AUTOMATIC RESPONSE FROM CASA

Subject:Remotely Piloted Aircraft Systems - Automatic Response [SEC=UNCLASSIFIED]

From:RPAS Mailbox <rpas@casa.gov.au>

Date:15-Oct-18, 10:13

To:Norman Collings [REDACTED]

Thank you for contacting the RPAS Branch. Emails are reviewed each day and allocated to a queue for a detailed response and/or appropriate action.

Please be advised that we are working to process your request as quickly as possible. We thank you for your patience.

Kind regards
RPAS Administration
RPAS Branch
CASA \ Aviation Group
www.casa.gov.au

REPLY FROM JOY BURCH MLA (Actually contains some information from Mick Gentleman MLA)

Subject: RE: MAJOR SAFETY CONCERN
From: BURCH <BURCH@parliament.act.gov.au>
Date: 16-Oct-18, 10:00
To: Norman Collings [REDACTED]

Good morning,
Thank you for your recent email regarding your concerns with the drone trials over Bonython.

I have recently contacted the relevant Minister on this issue and have received the below response.

"This trial provides an opportunity to learn about the challenges and opportunities presented by delivery drones, including community concerns about noise. I appreciate this feedback as this will inform the ongoing development of the business model... The ACT Government's role has been to facilitate the use of a site in Greenway for the take-off and storage of drones through a temporary license for the land. This has included imposing conditions on Wing including a requirement for compliance with the Privacy Act 1988, and limiting operating hours to the same standards the ACT Government has for other activities that create noise in suburban areas such as lawn mowing (for example the service is allowed to operate between 7am-8pm weekdays and 8am-8pm on weekends)."

I can also advise that if you have any additional concerns Wing may be contacted directly via their website: https://x.company/intl/en_au/wing/australia/.

Thank you again for raising this matter with me, I hope this information may be of assistance to you. Please do not hesitate to get in contact if you have any further inquiries or issues you wish to raise, no matter how big or small.

Sincerely,
Joy Burch MLA Member for Brindabella
Emails CASA

To: [REDACTED] 10/9/18 12:59 ⓘ 🖨️ ↶ More ▾

Attention [REDACTED]

Hi [REDACTED]

I understand that you are the person responsible in CASA for monitoring the drone project pilot in Bonython. I wish to lodge my objection to any extension of the pilot. Throughout the last two weekends drones have flown repeatedly across my back and front gardens. My reasons are several but the main ones are: I consider this dangerous (I hear that one has already crashed), intrusive, noisy and an invasion of my privacy (The company have told me that the drones carry cameras). I have raised my objections with the company operating the drones, Mr Mick Gentleman MLA, ACT Police and AirServicesAustralia, all of whom have suggested I raise them with CASA.

Various reasons for a pilot have been explained to me and the one that carries the most credibility is that testing systems over populated areas is being trialled. This is valid but need not continue after the six months pilot. The company can perhaps discuss with the Government alternative test locations. It would also be very considerate of the Government if it had consulted with the residents in Bonython prior to allocating Bonython as the suburb for the pilot. Perhaps consultation should be included for future locations. The company in all fairness have consulted, after the event and with no intention, it appears ,of ceasing this imposition on local residents.

Please let me know when this pilot will terminate so that I know when I can return to the enjoyment of my property.

Kind regards

Liz Dean

To: [REDACTED]

23/9/18 12:21



Hi [REDACTED]

As the drone flew over my house a few minutes ago I recalled that I have not had an acknowledgement from you or a reply. If you are not the person responsible for overseeing this project for CASA I would be grateful if you could let me know the appropriate person to contact please. There are already some indications that this issue is dividing our suburb community. We don't need such divisions in what until now has been a peaceful suburb to live in.

Kind regards

Liz Dean



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 38

Date Authorised for Publication: 7 February 2019

4 February 2019

Standing Committee on Economic Development and Tourism
ACT Legislative Assembly
GPO Box 1020
CANBERRA ACT 2601

Dear Committee

CBC Submission to inquiry into Drone Delivery Systems in the ACT

The Canberra Business Chamber welcomes the opportunity to comment on the introduction of drone delivery systems in the Australian Capital Territory.

In general, the Chamber supports the introduction of drone delivery systems in the ACT.

We also commend the ACT government in its work so far to encourage the use of Canberra as a suitable place in which to do such business.

We believe that drone delivery services have the capacity to provide consumers with new and innovative options for product delivery; may allow small local firms to develop new markets for their goods; and can increase the overall quality of the customer experience.

We support the introduction of an appropriate regulatory regime which:

- Makes it feasible for drone delivery systems to be operated in the Territory
- Provides adequate safeguards as to air usage
- Protects local residents and wildlife from unnecessary disturbance

The above are matters which the Legislative Assembly must ultimately decide on, and we welcome the develop of appropriate laws in due course.

At the same time, such frameworks should also be constructed in a manner that encourages a number of different delivery firms to be able to operate in the market. Any regulatory framework must ensure free and open competition between different drone delivery services and ensure that new market entrants are not effectively precluded from competing in the market as it evolves.

Should you require any further information, please do not hesitate to contact the Chamber.

Regards



Dr Michael Schaper



Canberra
Business Chamber

ABN: 33 600 390 538
T: 02 6247 4199
E: info@canberrabusiness.com
www.canberrabusiness.com

Level 3, 243 Northbourne Avenue
Lyneham ACT 2602, Australia
PO Box 6308, O'Connor ACT 2602

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LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 39

Date Authorised for Publication: 7 February 2019

Submission by Anne Gardner received via Access Canberra. Confirmed as submission 6 February 2018

I am registering strong opposition to the possible Project Wing trial and drone use in Palmerston. I make three points:

1. This commercial scale drone trial is likely to reduce my privacy and increase noise levels in an area that I carefully chose to live in when I returned to Canberra 8 years ago. I chose Palmerston for its established vegetation, peacefulness, privacy and great bird life. I do not want the 500 feet above my house 'unlocked'.
2. Home delivery of small items has other adverse environmental effects through generation of more litter, non-recyclable packaging etc.
3. The trial is about subsidising a large multinational company to collect urban data and develop unmanned traffic management system software. It is not about trying out utility of coffee delivery etc. A trial that really looks at delivery of emergency health services should be specifically designed.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 040

Date Authorised for Publication: 27 February 2019

Submission

Inquiry into drone delivery systems in the ACT

Anna Weatherly



I would like to make comments in relation to terms of reference 4 and 6

Term of Reference 4 - the extent of any environmental impact as a result of trialling drone delivery technology on:

(I) the residents within the trial area

While recognizing the convenience of drone delivery is attractive, especially for the 'time poor' consumer, my concern is that the long-term costs – often difficult to quantify – will be hard to remediate once the presence of drones has become commonplace in our suburban skyline.

A primary reason for my decision to settle in Canberra has been the combination of an inner-city urban experience and life in a natural environment. As I write this, I look out at a brilliant, clear open sky and listen to the active birdlife. I am a five-minute walk from bushland and a regenerated wetland — highly valued environments for residents and for native fauna.

There would need to be a very powerful reason for diluting the magnificent skyline with visual and noise pollution, or for stressing wildlife. I do not believe the convenience of delivery drones justifies this.

Term of Reference 6 – Any Other Relevant Matter

My professional background is in working with victims of crime, frequently women who have been subjected to ongoing acts of intimate partner and family violence. Perpetrators of interpersonal violence will often go to extreme lengths for extended periods of time — often many years, after a separation — to stalk, spy on and threaten their former partners and family members. Increasingly, spying technology of various forms is being used.

I'm not suggesting that delivery drones would be illegitimately used for this purpose, but that the normalisation of drones in an urban area would make it harder to detect an illegal drone being used to spy. Even if suspected, it would be difficult for the victim to take action and for law enforcement agencies to arrive in time to locate the drone's operator.

Drones overhead are likely to exacerbate feelings of unsafety for people already experiencing the ongoing psychological stress of living with the knowledge that a person is intent on controlling their life, and/or doing them physical harm.

Anna Weatherly



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 041

Date Authorised for Publication: 27 February 2019

Submission to the Standing Committee on Economic Development and Tourism

Parliamentary inquiry: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Submitted with consideration and concern.

Loss of the community's amenity

As the Canberra Times observed, many locals "aren't comfortable with the idea of a 1.5 meter wide, load-carrying semi-autonomous aircraft cruising overhead at low altitude at speeds of up to 120km/h". The sooner these drones are taken out of the sky the better for all communities being abused by Project Wing! It appears from Government statements that it is up to residents to take them down whenever/wherever possible and regain their quality of life! They are an abomination!

In an attempt to ingratiate itself with the community generally, Project Wing has been 'brown-nosing' to "Communities at Work" giving them contributions for each flight delivery! This is the ultimate in hypocrisy.

Drones are far more irritating than lawnmowers on the week-end (as stated by Chief Minister Andrew Barr, who has been unaffected by the drones' invasion of privacy). They operate at a higher noise frequency and noise level, illegal at the 85 dB reading that has been measured. The very real problem here is that no agency is responsible for drone noise. There is a very big gap in the regulations, which Project Wing exploits. The commercial drones used by Project Wing are far more repetitive than lawnmowers and can be dangerous. Their sudden appearance overhead frightens pets and wildlife! They cause a loss of amenity for residents and will blanket the skies if allowed to perpetuate, as promised by Project Wing in the future. Project Wing has stated that there is likely to be 40,000 drone flights occurring in the ACT if the Government fully sanctions this community abuse, as it operates at the current time. Their claim that \$40 million will be injected into the ACT economy is a fantasy as they will never be accepted by a majority of residents.

I hate the noise and loss of amenity and hope they do not get further approval. My vote at the next election will be considering the ignorance of MLA Mick Gentleman in allowing this "trial" without community consultation and the apparent support for its expansion into Gungahlin suburbs! Our ACT Government seems very naive about community sentiment against this noise invasion. It would be very good if it is taken out of the hands of the ACT Government and is stopped by a responsible authority, not CASA, who see no problem with this gross intrusion and loss of amenity for residents.

The sooner these drones are brought down the better for all communities who lose their amenity when these very noisy, buzzing annoyances fly over regularly. Even worse when they hover at 7 metres to deliver their cargo (when they are very, very noisy) to the people too lazy to get off their bums and go to the shop. Politicians will pay for this gross intrusion!

It is VERY clear that Project Wing already has the approval from the ACT Government to expand into Gungahlin, even if not formalised. If this travesty continues they will soon be all over the ACT constantly buzzing and invading privacy, as they have cameras! They will fly all day with little control and with multiple drone flights by numerous companies ... a cacophony of sound overhead!!

The so-called "trial" in Bonython was not anything but a technical trial about how to fly the drones and deliver goods that people are too lazy to get off their bums and go to the shop for. Deliveries by motorcycle or car are far less invasive and quick, importantly they employ people and do not invade privacy with cameras. It has had nothing to do with the loss of amenity by residents of the areas flown over. This is a travesty and must be stopped.

These actions and new developments of this travesty being set up in Gungahlin are a true example of business interests trumping citizen's rights. As a resident of Bonython I expected the "trial" to be completed first and a thorough report presented BY THE GOVERNMENT not by the business invested in this folly of MLA Mick Gentleman. Only then should any possible expansion of this annoyance of a very noisy aerial commercial operation, in an area zoned as suburban, be even considered.

There is a reason towns and cities have zoning and restrictions on activities. Commercial zones and suburban zones, industrial zones etc. Get the commercial, very noisy drones the hell out of the suburbs! They cannot be meeting zoning restrictions. This is a travesty of our right to peace, the reason we live in the suburb of Bonython.

CASA should, but won't because of its questionable complicity, stop this immediately as a hazard to the community because it appears that the current Government of the ACT is incapable of responsible behaviour here.

Of particular note is the fact that commercial drones are not accepted in any other jurisdiction in the world! Surely the ACT Assembly members cannot be so ignorant as to not know this and the reasons why it is rejected globally.

Risks to property, people, pets and wildlife

A very pleasant day was enjoyed recently partying with friends in my backyard in Bonython when the drones were not flying and the peacefulness we experienced without them. They were not flying on that day due to the extreme hot weather conditions and the ever-present risk they presented of starting a fire if one of them failed. The absence of the drones was very noticeable.

The risks are a very real concern, not only as a fire risk for the national capital's forests, threatened grasslands and grassy woodlands but also a fire and physical damage risk to residents' property and the risk of injury or death of a person. Not to mention the frightening effect on household pets and wildlife! My dog is covered by the Project Wing drones when they are flying noisily overhead or nearby, appearing suddenly and noisily, hovering so close to the houses and people!.

CASA's role

CASA is the national Civil Aviation Safety Authority. They have allowed these flights against all existing regulations that apply to all drone flights. They have lost most of their integrity when it comes to drone use in Australia! No input from the public, just made up their own minds. Very suspicious!

CASA has lost its integrity and community confidence over these Project Wing drone operations and leaves open the question of what deal was made between Project Wing and CASA. Why would any Government body give free rein to a business that could only operate if it was given exclusion from all regulations that apply to all others using drones?

Perhaps this should be investigated by the incoming Federal Government Integrity Commissioner. Too much secrecy over this 'deal', which clearly is what it was and remains,

as Project Wing supposedly without approval expands into the northern suburbs of Gungahlin!

CASA has a lot of explaining to do. Why did they exempt Project Wing from operating requirements? Project Wing drone operations are free from most of the restrictions.

As I understand it, no legal approval has been given yet for Project Wing drones to operate out of Mitchell and over Gungahlin houses, nature reserves and suburbs generally. Have they pre-empted the approvals necessary?

Take the drones down! My dog is sent crazy by them and I detest the drones, the operators and Mick Gentleman MLA for ever allowing them to operate!

The drones were flying over my house in large numbers of flights on the last day of the phony "trial". 18 flights recorded and they start at 8.00 am! Appalling ACT Government management and appalling actions of CASA, an organisation that has lost most of its credibility over drone operations in Australia. They have no moral authority now to determine any regulations concerning the public's operation of drones, none whatsoever. They have demonstrated clearly that drone operators can do as they please!. CASA has no regard at all to the loss of community amenity.

This is clearly demonstrated by the illegal high noise levels (85 dB) and camera operations permitted by CASA, invading privacy and continuing to frighten and stress my dog and other pets and wildlife. Project Wing stated that they would use quieter drones with modified propellers. Given that the noise level has not reduced they clearly have either not done that or have been quite unsuccessful and we can assume it is simply not possible to have quiet drones! I will continue to urge all Australians to work hard to take down these damn drones.

CASA has waived the legal requirements for drones in approving the obnoxious use of the Wing Project drones. CASA "exempted the (Wing Project) drones from flying near buildings". They also exempted them from flying near people and from noise regulations. So much secrecy.

Appropriate use of drones


Rural properties can be hundreds of kilometres from needed materials or medications. Drones should be carefully screened to operate in such situations. Of course that is likely to be not commercial (and incidentally of no financial benefit to the politicians supporting the use of drones in urban areas).

Drones could also be sanctioned for deliveries to house-bound and disabled residents who have increased difficulties getting to shops and dispensaries and who register with the government and drone operator and/or use their appropriate certification identity codes. This is very different to the community abuse by Project Wing in Bonython!

What further action can the community take? Perhaps a Class Action against the ACT Government and operator for the loss of amenity, inherent danger to people and property and the negative impact on pets and wildlife will be necessary. This is a sad conclusion.

Sincerely,

Dr Keith Williams



[REDACTED]



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 042

Date Authorised for Publication: 27 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	
Postal Address:	
Phone:	
Email: (if applicable)	

Optional:

How long you have lived in the area:	17 years
Occupation:	Retired
Any other background information:	Retired from APS 2007. Vietnam War veteran.

NOTE: Most submissions are made public once they are submitted. If you do not feel comfortable identifying yourself, make it clear in a covering letter that you wish your submission to remain anonymous. Your submission may still be made public but your personal details won't be.

What you can include in your Statements:

Below are some points that you may want to include in your submission -

- Why you are writing to the Inquiry: e.g. you live in the area, you have pets, small children, medical concerns etc.
 - Issues and concerns, e.g. privacy, data collection, safety, pets and wildlife.
 - Any problems, or how the drone deliveries have affected you and your household.
 - The location of your home to the flight path.
 - Examples of the impact it has had on you, e.g. noise, feeling angry or unsafe, animal behaviour, neighbour relationships.
 - Detrimental social impact in the community when many neighbours are now at loggerheads.
 - Selfishness of one person to get a delivery at the expense of so many households.
 - Why you think it is not feasible for drone deliveries in a suburban area eg sensibility of delivery of minor or one off consumables when a large shopping centre is so close.
 - Your feelings on the consultative process by Project Wing and the ACT Government.
 - Lack of regulations and monitoring of the trial.
 - No independent authority to provide feedback.
 - Concern and risks of delivery of chemist items.
 - Suggestions or improvements.
 - General comments.
-

I would like to comment on the following terms of reference:

- 1) The decision to base the trials of the technology in the ACT and surrounding region

While I know that residents of Bonython were invited to participate in the drone delivery trial, I am not aware of a prior survey of Bonython residents to determine their desire for, or objections to, such trial. It is unfortunate that residents' opinions were not sought at the time.

- 2) The economic benefit of drone delivery technology being tested in the ACT including:

- a. The investment that has been brought in to the Territory

I understand that drone delivery of this nature might provide benefit to the drone operator, but it is difficult to see that anyone else would benefit economically without depriving another party of a benefit they once enjoyed, e.g. traditional delivery operators and local businesses.

- b. The number of jobs that have been created as part of the trial

While delivery roles would change, someone's employment gain would be at someone else's expense as drones replaced traditional delivery methods.

- c. The extent of collaboration with local industry and academic institutions

It is inevitable that drone delivery from remote sellers would impact negatively on the viability of local businesses in the delivery area, e.g. pharmacies.

- 3) The extent of regulatory oversight of drone technology at various levels of government including:

- a. Local authorities such as EPA, Worksafe, Access Canberra

The new technology must surely impact on matters within the authority of the above agencies. I wonder what the involvement of these agencies was during the trial.

- b. Commonwealth agencies such as Air Services Australia, Civil Aviation Safety Authority

I understand that new regulation will need to be enacted and enforced to oversee drone technology, which has already presented considerable risk elsewhere.

- 4) The extent of any environmental impact as a result of trialling drone delivery technology on:

- a. Residents within the trial area

My initial reaction to the sudden sound and presence of the trial drones was to 'hit the deck', as the sound evoked unsettling memories of incoming ordnance in South Vietnam many years ago. My PTSD was immediately reactivated, necessitating resumption of my medication for some time. The inordinate reaction gradually abated as the drones kept coming, but the irritation remained for the duration of the trial.

b. Native wildlife

Bonython backs onto the Murrumbidgee corridor with its abundant wildlife. This wonderful feature of the suburb was severely disrupted for the duration of the trial. Over the Christmas/NY period while the drones were grounded, there was a welcome return of the birds. Now that the trial has ended, hopefully the birds will be here to stay.

c. Domestic animals

I do not have a domestic animal, but it was obvious from the barking emanating from neighbours' yards that the dogs disapproved of the drones as much as my family and I did.

5) Ways to improve the use of drone delivery technology within the ACT

I understand that Wing is attempting to develop quieter propulsion for the drones. While some might regard that as an improvement, it would also enable the drones to surprise with a sudden presence detectable only when the drone was imminent, i.e. without warning. That could be even more disquieting for some people, including me.

6) Any other relevant matter

a. The constant presence and expectation of suburban delivery drones would provide terrorists with easy opportunity to ply their nefarious activities within heavily populated residential areas.

b. I believe drones have some wonderfully useful tasks to perform for the benefit of society. However, take-away food delivery in the suburbs is definitely not one of those useful functions.

Thank you for the opportunity to voice my concerns. I would appreciate the Committee's consideration of my comments.

[REDACTED]
[REDACTED]

TIPS:

- Typed electronic submissions are preferable, although legible hand-written submissions are acceptable. Submissions should not be stapled or otherwise bound.
- Submissions should be sent to:

VIA POST:

The Committee Secretary
STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
GPO Box 1020, CANBERRA CITY ACT 2601

HAND DELIVERED:

Committee Support Office
Office of the Legislative Assembly
196 London Circuit, Canberra ACT 2601

VIA E-MAIL:

Standing Committee on Economic Development and Tourism
Email : LACommitteeEDT@parliament.act.gov.au

- Address the Terms of Reference. You do not need to write about every term of reference but you will need to address at least one. Reference those that are relevant to you.
- Your submission may include facts, opinions or arguments.
- Your submission does not have to be long. Focus on the most important issues that matter to you.
- It can be in the form of a letter, a short document or a substantial paper.
- Be clear and concise about happenings.
- Stick with facts, i.e. don't use phrases like "the drones go over my house 500 times a day".
- Use headings.
- Use separate paragraphs for each issue.
- Use dot points.
- Use page numbers
- Be respectful and polite.

For more information refer to - **A GUIDE FOR MAKING A SUBMISSION OR APPEARING BEFORE A COMMITTEE OF THE LEGISLATIVE ASSEMBLY FOR THE ACT.**

https://www.parliament.act.gov.au/data/assets/pdf_file/0020/1063037/Witness-guide-2018-04.pdf

REMEMBER: Make sure you are aware of the closing date of the submission, being 22 February 2019.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

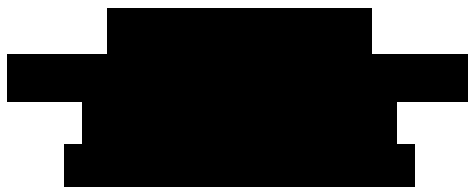
Inquiry into drone delivery systems in the ACT

Submission Number: 043

Date Authorised for Publication: 27 February 2019

Submission

Inquiry into drone delivery systems in the ACT



Terms of Reference

- 1) the decision to base the trials of the technology in the ACT and surrounding region
- 2) the economic impact of drone delivery technology in the ACT
 - (I) investment that has been brought into the Territory
 - (II) number of jobs created as part of the trial
 - (III) extent of collaboration with local industry and academic institutions
- 3) the extent of regulatory oversight of drone technology at various levels of government including but not limited to:
 - (I) Local authorities such as EPA, Worksafe, Access Canberra
 - (II) Commonwealth agencies such as Air Services Australia and Civil Aviation Safety Authority
- 4) the extent of any environmental impact as a result of trialling drone delivery technology on:
 - (I) the residents within the trial area
 - (II) native wildlife
 - (III) domestic animals
 - (IV) greenhouse gas emissions
- 5) ways to improve the use of drone delivery technology within the ACT
- 6) any other relevant matter
- 7) information privacy

1) The Decision to Base the Trials in ACT and Surrounding Region

Commercial drone delivery is an untried technology, in its developmental phase. Other countries, like the home of the technology - the United States, have been cautious and their regulations are stricter. There should be no pride in being a 'world first' if the outcome is deleterious.

The ACT Government under Chief Minister Andrew Barr is focused on the economic benefits of new technologies, and opposition is presented as hidebound. A balanced Government would care for the wellbeing of the population and protect the special attractions of Canberra that make it eminently liveable: the peace and quiet, the beauty of natural surrounds and the nature *within* the city.

There is a lack of clarity for the population as to how this trial is being monitored and evaluated. With the residents of Bonython split between some in favour and probably more desperately against drone technology, how is the Government making an objective and wise decision?

The trial (free for those receiving the service) and taking place in a suburb with long distances to the nearest shops, receives glowing feedback (according to the Wing website, using what looks like highly skewed data). Hopefully this trial has been closely monitored by an independent research body! We also need more balanced projections than provided by the report organised by Wing from consultancy company AlphaBeta.

2) The Economic Impact of Drone Delivery Technology being tested in the ACT including the investment brought in to the Territory, the number of jobs created as part of the trial, the extent of collaboration with local industry and academic institutions

If Wing is to build a facility in Mitchell there will be a new delivery business in that industrial suburb. What jobs that this create for the local population? I assume the development of the technology and the fabrication of the drones remains in the U.S., care of the parent company Alphabet and the overarching Google. The Mitchell facility will probably be primarily the transport hub for drone deliveries.

The number of jobs created could be minor. If one overseeing 'pilot' can manage a fleet of drones, you may not need many 'operators' at all and eventually the drones will be fully automated. There would not have to be many staff – repair and administrative and marketing. Meanwhile there may be reduced employment in present delivery systems. Perhaps another non-polluting delivery system could be supported by the Government. Bicycle deliveries could potentially employ a large number of the job-hungry young.

So far there have been a few collaborating companies involved in the trial – Mexican meals, a chemist chain, coffee and chocolate providers. It would be interesting to talk to these companies to find out how the packaging and staff involvement work out for them. Wing predicts huge economic benefits to small businesses. What do the small businesses predict?

3) The Extent of Regulatory Oversight of Drone Technology at Various Levels of Government

Local authorities such as EPA, Worksafe and Access Canberra need to create a strict regulatory environment *before* the new drone technology is encouraged to start commercial operations. The ACT Government through EPA should be demanding that the present noise level of drones be dramatically reduced *before* they are allowed to operate in suburban areas, otherwise the noise pollution laws are being broken each time a drone comes within hearing range.

Worksafe should be concerned about the history of drones worldwide and the constant reportage of accidents, through failures of equipment (even with backups and 'fail safe' technology), dangers to public and pets if drones fall from the sky or crash into structures and trees (and this can happen even with fluctuations in the strength of wireless transmissions), hacking of the equipment for mischief or terrorism.

Access Canberra should be fully apprised of possible damage to public spaces and infrastructure due to the above possibilities.

If you look at the accidents and failures that have beset military drones with all their advanced technologies, how safe will these commercial drones be?

Commonwealth agencies such as Air Services Australia and CASA have to develop new regulations for lower air-space use. Regulations for the air above us hopefully will prevent what has happened to our oceans, which are now polluted rubbish dumps, with reduced fish stock and dying reefs. It is not only humans who use the lower air-space with their small planes, weather balloons, skydiving, hang gliding and kite-flying. This space is the essential habitat of insects, bats, birds. There are also ownership questions. Suburban homes own an area (height undefined) above their properties. There are serious competing interests and users of lower air-space.

There is also that powerful attraction of a clear, open sky that is one of the key pleasures of living in Canberra and should not be discounted no matter how hard these qualities are to quantify. Imagine how this will become a lost memory as thousands of buzzing drones fill the sky.

For a company like Google and its offshoot Wing, the priority is making money and, according to Goldman Sachs, there are billions of dollars to be made in the commercial drone industry. The more drones that fly, the better for these companies' balance sheets. The more frequently, and the longer hours the drones fly, the better for the companies. They would clearly prefer few restrictions and that is exactly why they are trying to operate in Australia, because other wealthy countries have tighter restrictions.

We should beware losing benefits which cannot be regained once lost, for the sake of enriching already wealthy and powerful corporations.

The regulatory controls over the lower air-space to protect a range of activities for humans and animals should be urgently developed, visualising the competition for the air-space enabled by powerful multi-national corporations and over-eager governments. Otherwise you can imagine a future of noise and visual pollution, accidents and long drawn-out legal cases.

4) The Extent of any Environmental Impact as a Result of Trialling Drone Delivery Technology

Considering about one-quarter of Bonython residents, who *have* experienced the disruption and noise, were angered enough to sign a petition asking for a ban of drone technology, this is a powerful indicator that, despite the joy of getting a fresh (and during the trial, freely delivered) cappuccino delivered within 6-10 minutes, the disruption and noise is intolerable. This is before a high level of deliveries, so imagine this manifold.

Canberra has been written up in ecology books for its amazingly rich wildlife (e.g., in Tim Low's *The New Nature*). The healthy symbiotic ecology of gardens, trees, insects, animals and birds will be severely disrupted by drones. The lower air-space is the survival habitat of birds and this is exactly where drones will create noise, disruption and danger which will threaten territorial sites, disrupt feeding, and cause abandonment of nests. Larger birds have been shown to attack drones and this can lead to damage and accidents to bird and drone alike.

The Wing Project makes the prediction that the use of drones will cut down substantially on vehicular traffic, significantly reducing the ACT's greenhouse gas emissions and reducing traffic accidents. (Drones use a lot of batteries, which are not exactly environmentally pure!) However, Wing also claims that drone deliveries will create a whole lot of *new* purchases – get your coffee delivered rather than brew your own! So, how is this reducing existing traffic? Could it be actually encouraging obesity instead? While drone deliveries are restricted to light objects, people still need to travel to the shops in their cars for most of their purchases. Even if drones did lead to lower carbon emissions, how would this be balanced against noise pollution and the cluttering of the sky? The Government should beware about wholesale swallowing of the corporation's hyped-up predictions.

5) Ways to Improve the Use of Drone Delivery Technology within the ACT

Drone delivery could be improved by requiring Wing to do what it claimed it aimed to do initially: develop emergency delivery drones to deliver defibrillators to those with heart trouble! If drones were used discriminately for surveys and emergencies they could be wonderful. But when a corporation claims this is their aim but they need years of commercial deliveries to ensure the reliability of their technology, you know the real purpose is the commercial delivery business and, even more worryingly, the rich business of data gathering and selling.

The ACT Government, if it cared for the wellbeing of its population (in terms of noise, protecting the existing attractions of the city, and encouraging people out of the lonely suburban home into the community and shopping centres), and if it also cared for Canberra's wildlife, would be legislating to allow drone deliveries only to the handicapped, home-bound elderly and for emergency situations. Even in some of these cases a live delivery person may be preferable to a machine; would an elderly person stuck at home prefer a machine or a person at their door who may say hello and chat for a few minutes?

6) Any Other Relevant Matter

Some questions:

Will the Report be released?

What were the terms of assessment of the trial?

What commercial benefit does the ACT Government expect from the grant of the licence?

Is there any intention to go to tender (e.g., to give an Australian company a chance?) for a contract?

If the delivery service is established, how is a 'rogue' drone distinguished from a Wing drone?

7) Information Privacy

Wing claims its cameras aimed at the ground are purely to ensure safe navigation. What regulations are in place to protect the privacy of the public against sale and sharing of commercial information about what people have had delivered, about the nature of their medicines, etc? What prevents the attachment of more sophisticated cameras that can collect and sell on a mass of private information?

Conclusion

In conclusion, the ACT Government's Inquiry has the opportunity now, before the commercial form of this technology gets a stranglehold, to take seriously the issues of noise pollution, the disruption of peace, the cluttering of the sky, the unknown damage to birdlife and other wildlife, the distress of domestic pets, the real concerns about failures of machinery and possible disasters, the increasing world issue of hacking, the invasion of privacy and the commercialisation of private space.

Drone technology is in its incipient stages. It is not an area to be rushing into head-on. There are too many already known problems and more areas of uncertainty. Encouragement of this untried technology in a climate of undeveloped regulations could be disastrous.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 044

Date Authorised for Publication: 27 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: drones
Date: Thursday, 7 February 2019 12:25:08 PM

To whom it may concern:

I have concerns about the use of drones for delivery in the ACT. I live in Bonython and have not been pleased about the trial. I think that the use of drones lends itself to a number of potential issues, including invasion of privacy, delivery of things to the wrong address, delivery of unwanted articles, delivery of dangerous items. I also think that it is another way of reducing workforce opportunities for people who do not have skills to undertake alternative positions. I would be much happier to know that people were not being replaced by machines.

Concerned citizen.

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LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 045

Date Authorised for Publication: 27 February 2019

From: [Scott McKenzie](#)
To: [LA Committee - EDT](#)
Subject: Wing drone trial in Bonython
Date: Tuesday, 12 February 2019 1:31:21 PM

To whom it may concern,,

As one of the family's that participated in the drone delivery program in Bonython I have been more than happy with the delivery service.

The complaints about the noise from the drone is what I believe to be marginal above that of a 2 stroke brush cutter. The argument against the noise and interference with wildlife I believe to be minimal and have video footage of a bird swooping the drone whilst it was completing a delivery.

The service and quality of products that were delivered were more than satisfactory.

The professionalism of the wing team has not been acknowledged and the drone program which is still in its infancy has a lot of potential into the future.

I do believe that future growth in helping the elderly and disadvantaged has not been explored as of yet and could be of benefit to helping the older generation whilst providing a community service and possibly reducing costs at the same time.

I have no hesitation in saying that this sort of technology should be pursued by the government and promoting a leading technology firm into future delivery alternatives whilst promoting the A.C.T as a technology friendly state.

If you have any more questions about my experience with wing I am more than happy to communicate this with you.

Cheers,
Scott McKenzie...

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LEGISLATIVE ASSEMBLY
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STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 046

Date Authorised for Publication: 27 February 2019

From: [robiseclarke](#)
To: [LA Committee - EDT](#)
Subject: Drones
Date: Wednesday, 13 February 2019 3:47:48 PM

I am a big supporter of drone deliveries. They get local traffic off the road, less cars that don't know the neighbourhood. They take alcohol affected drivers off the street, untinking drunks who just need something to eat. They reduce carbon footprint, offer a wonderful service and important stuff like sunscreen for kids, Panadol when you just can't get up and kids Panadol so you don't have to pack up the kids just to save their lives. The absolute lies the people against drones told. They should have been jailed.

Kind regards

Robert Clarke

Sent on the go with Vodafone



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 047

Date Authorised for Publication: 27 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Submission : Inquiry into Drone Delivery System in the ACT
Date: Sunday, 17 February 2019 4:24:49 PM

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	[REDACTED]
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	[REDACTED]

Please note, I would like my submission to remain anonymous.

-

I am writing to comment on the following terms of reference; the extent and environmental impact as a result of trialling drone delivery technology on –

- a. the residents within the trial area
 - b. the native wildlife
- and
- c. domestics animals and specifically to bring attention to how the Drones are disrupting the wild life in the Suburb of Bonython as well as how it has affected me and my family.

A neighbour two doors away from my home was receiving deliveries several times a day at least five times a week, every week. As there are a number of people living in the house two doors away from my home, at least 4 or 5 deliveries would take place in the space of approx. 30 minutes which was very noisy (sounds like screeching metal as it lowers and then flies up)and distracting for me and all living in my home and surrounding houses.

When the Currawongs began to attack the Drones it was amazing to see, but I felt so helpless watching the birds try to scare the drone off as they were obviously afraid it was a larger bird of prey trying to kill their eggs or young. The Currawongs made attempts every single time to get rid of the drone. My concern was that the Currawong would be injured or worse. This is unacceptable that birds that are native to our flora and fauna are at risk because of the Drone delivery. With this the dogs have been sadly affected by the noise and with the deliveries dogs will begin to bark making it even noisier and once one dog starts they all start to bark, and it goes on and on even after the drone has gone.

My peaceful existence here in Bonython since 1990 has been disrupted with a lot of high pitched 'whinning' noises that could be heard from INSIDE THE HOUSE as

the drone was on approach to the delivery location and the fear a drone could fall on my home or car or family or myself. So since the start in July 2018 I have been living with the fear that my home or other property or people could be injured as no drone can be guaranteed not to fall at some stage during operation. It is not feasible they will never have difficulties / faults or damage and fall from the sky.

The trial has caused me to feel unsafe and to see birds under threat and a lot of birds have disappeared from my backyard as the constant noise that they don't understand what the flying thing is, so they go away and we are worse off for not having native birds in our backyards.

Canberra is a beautiful place to live and during this trial I felt that this has been taken away from me without any notice, without any consultation, without any care of how the people of Bonython will feel about the invasion of our Peace, privacy and the deterioration of the bird life throughout the suburb, not to mention how the dogs behave and the safety issues that are there.

I hope to never see one ever again.

Thank you.

Yours sincerely.



17 February, 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 048

Date Authorised for Publication: 27 February 2019

From: [Colin Carpenter](#)
To: [LA Committee - EDT](#)
Subject: Submission - INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT
Date: Monday, 18 February 2019 7:19:48 AM

Personal Details

Name:	Colin Carpenter
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	[REDACTED]

The Committee Secretary

I am writing to voice my concern over the recent Project Wing drone delivery trial in the suburb of Bonython. I have lived in Bonython since 2003 and chose this suburb because of its close proximity to the Tuggeranong Town Centre, nearby bushland and quiet location away from aircraft flight paths.

My main concern with the drone delivery trial is the noise created by the drones as they fly overhead and primarily as they hover to deliver their payload. The noise can be likened to a Formula One racing car, or the sound of deliberate tyres screeching. The sound of the drone (s) can be quite startling and can be heard from within a closed house. I find it intolerable that myself, and members of a quite community should be subjected to this un-necessary disruption to the enjoyment of our properties. I do not object to the legitimate use of a drone where a genuine need exists, such as the delivery of emergency supplies to an isolated property, or for legitimate search operations.

I have concerns about privacy issues. Project Wing have advised that video recordings are made from the drone of the houses along the flight path. There is already too much data collected about all of us in this digital world, and I object to this further intrusion of my privacy.

I'm concerned also about the impact the drones have had on wildlife and domestic pets. Without scientific data as backup, I can genuinely state that the drones have reduced the numbers of birds in my area. I have seen on two separate occasions Magpies trying to attack a drone in flight. Since the trial has ended, I've seen a return of the birds in my area.

My property is located towards the edge of the trial zone and I didn't receive the number of flights that those properties located close to the Project Wing base would receive. I can imagine how much worse it must be for those residents.

Thank you

Colin Carpenter



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 049

Date Authorised for Publication: 27 February 2019

From: [storkyboy.T](#)
To: [LA Committee - EDT](#)
Subject: Inquiry into Drone Delivery System in the ACT
Date: Monday, 18 February 2019 9:12:39 AM

From: Trevor Stohr
To: LA Committee - EDT
Subject: Inquiry into Drone Delivery System in the ACT
Date: Monday, 18 February 2019

To: The Standing Committee on Economic Development and Tourism

I am writing regarding the Bonython Drone Trial and pending expansion into Mitchell. Many ideas seem good at the time but on occasion there are unintended consequences and unforeseen issues. There are many issues at stake here but I start with the most important as I see it and then bullet point the others.

There is absolutely no foresight into the disruption of sleep and rest patterns for shift workers. Having recently retired, I was a long term shift worker (38 years) involving primarily a weekly 50/50 split between day and night shift. I can assure you the last 15 years quality sleep patterns became harder and harder. The slightest noise wakes one up and often falling asleep again after having been woken could take up to 90 minutes or so. There is no doubt, this Drone Trial would have affected me badly. The result for shift workers so affected, attending work in a less than ideal state or in other words, fatigued. The noise from these drones is so intrusive and loud (with windows closed also) that there would be little chance of quality sleep if any. My spouse also being a shift worker was unable to sleep properly during the day because of the busy drone activity during the Bonython trial.

By way of frequency, on just one Saturday morning in the space of exactly 1 hour there were 22 Drone passes in front of, over or behind my house (11 deliveries and return). The Drone activity continued throughout the day. Those living closest to the Drone launch point will be right under the flight path and will have it worse.

Are Doctors, Nurses, Paramedics, Police, Fireman etc supposed to put up with this? Are they required attend work tired and be expected to carry out time critical life saving treatment, emergency driving, responding to emergency situations, let alone their regular non emergency work and make no errors in their fatigued state. Obviously the answer should be no, not ever, but an uptake of Drone services will lead to this.

1. Loud and Intrusive noise of Drone activity = sleep deprivation for shift workers and straight out annoyance among other issues.
2. Privacy concerns. Since the introduction of the Drone trial, I have noted private drones flying over my backyard and others, one at dusk. Constant Drone noise will lead to complacency and who is to say one of these illegal drones wont be staking out a house.
3. Apparent lack of any consultation, framework, regulation and no independent body to send feedback to.
4. Many affected by the delivery to one person.
5. Job losses.

In short, the Drone trial is noisy and socially objectionable and the drive for profit/money

should not over rule this. For the Drone trial noise to be compared to lawn mower activity is just offensive and shows no understanding or empathy for those who suffer because of it.

Please take note of this submission on behalf of all shift workers and please act to ban them from Canberra's airspace. The life you save might be your own.

Regards

Trevor





LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 050

Date Authorised for Publication: 27 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

SUBMISSION TO INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT



Personal Details:

Name:	[REDACTED]
Postal Address:	[REDACTED] [REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	[REDACTED]

I hereby make a submission to the **Standing Committee on Economic Development and Tourism** to be considered as part of the **ACT Legislative Assembly Inquiry Into Drone Delivery Systems in the ACT**.

I am a resident of Bonython. I have been subjected to the Project Wing Bonython drone delivery trial since September 2018 until its conclusion on 2 February 2019. Therefore I will begin by addressing **(1)(d (i) under the Terms of Reference**.

Firstly, here is a brief history of Project Wing. Project Wing was born out of Google X, Google's secretive labs where it "cooks" up potentially world-changing technologies". Since 2017 Project Wing has been conducting its operations in Australia, in partnership with Unmanned Systems Australia, who provide consulting and drone services in the area of remotely piloted aircraft. They are a Multi-Use Aviation Safety Contractor and Consultant to CASA (conflict of interest?). **Unmanned Systems Australia was granted approval by CASA to conduct "BEYOND VISUAL LINE OF SIGHT AND OPERATIONS OF PEOPLE IN THE ACT AS PART OF ITS PARTNERSHIP WITH PROJECT WING".** **"...UNMANNED SYSTEMS AUSTRALIA HAS BEEN GRANTED APPROVAL (CASA) TO CONDUCT COMMERCIAL DRONE DELIVERY OPERATIONS IN THE ACT. WE THINK THIS IS THE FIRST APPROVAL OF ITS KIND ANYWHERE IN THE WORLD, AND ESTABLISHES UNMANNED SYSTEMS AUSTRALIA AND PROJECT WING AS WORLD LEADERS IN THE DRONE DELIVERY MARKET."** (www.unmannedsystemsaustralia.com/techrepublic.com)

THE MAIN QUESTION I HAVE IS WHO IS DRIVING THIS?

(1)(d) THE EXTENT OF ANY ENVIRONMENTAL IMPACT AS A RESULT OF TRIALLING DRONE DELIVERY TECHNOLOGY ON:

(i) Residents Within The Trial Area:

- Neither myself nor any other member of my family was consulted by either the ACT Government or the drone trial operator, Project Wing Australia, about this trial. We were not advised it would be taking place, nor were we asked for our permission for it to take place over our home or suburb.
- Since September 2018 we have been subjected to the following against our will:
 1. Unmanned Aerial Vehicles (drones) 3 metres long and 1.5 metres wide with 12 propellers, carrying loads up to 1.5 kg, with cameras filming us, making noise of 85 decibels, flying at about 20 to 30 metres above the ground directly over our backyard and hovering next to our backyard.
 2. These drones were making deliveries to a direct neighbour about 40 metres from our family room. Each delivery constituted two drone flights across our backyard. **These neighbours got 10 deliveries most Saturdays and Sundays within the space of a few hours, sometimes within one hour. OCCASIONALLY THEY GOT 20 DELIVERIES IN A DAY = 40 DRONE FLIGHTS OVER OUR BACKYARD.**
 3. This would occur often starting at 8 am each morning.
 4. The noise of these drones was as loud inside the house as outside - it can be heard even through double-glazed windows.
 5. **THIS MEANT THAT THE DRONES WERE FLYING AT HEIGHTS OF 20 AND 30 METRES DIRECTLY OVER OUR BACKYARD, HOVERING NEXT TO OUR BACKYARD, FILMING US, FROM 8 AM, UP TO 20 TIMES (IE x 40 FLYOVERS) EACH SATURDAY AND SUNDAY FOR FIVE MONTHS, MAKING A HIGH PITCHED SCREAMING/SCREECHING NOISE MEASURED AT 85 DECIBELS. (video footage of this drone activity will be forwarded under separate cover).**
 - **This is an outrageous and intolerable situation. It is a direct violation of our human rights as Article 12 of the Universal Declaration of Human Rights states: "No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honour and reputation. Everyone has the RIGHT to the protection of the law against such interference or attacks".**
 - See "Human Rights" below.
 6. As time went on, these neighbours got deliveries on week days also.
- **The impact of the above on us was as follows:**

1. We were woken from sleep
2. Our concentration and work was disrupted - both my husband and I conduct our businesses from our home
3. Our family meal times were disturbed and disrupted
4. Our quality of life was greatly diminished
5. Our peace, privacy and basic human rights were violated
6. Our cat was terrified
7. The beautiful birds that loved our garden were so frightened by the drones they left Bonython
8. Our lives became dominated by drone activity, both from our neighbours and in our whole suburb
9. Neighbourhood conflict was reported.
10. The drones were constantly hovering over/delivering next to our house, flying over our house and flying over our suburb, each accompanied by varying profoundly irritating sounds, such as high pitched screaming/screeching/buzzing/whining/zooming
11. A NASA study found that drones make the most annoying noise of all noises to humans (see below **"The Decision to Base the Trials of the Technology in the ACT and Surrounding Region"**).
12. We became hyper-alert to the presence, activity and noise of drones
13. We became increasingly outraged, angry, and agitated at the constant noise and presence of drones in our daily life against our will
14. It follows that our health and wellbeing was threatened. (see below **"Health and Wellbeing"**).
15. We were angry, outraged and incredulous that the drones were flying over our backyards with downward operating cameras filming us in our homes and that we were told no government agency was responsible for privacy issues in regards to the Project Wing drone operations. We are aware that all film footage that the drones take gets sent back to the United States of America. We are told it is kept for 30 days. We have no guarantees that our privacy is not being invaded and compromised during this time. We do not know what third parties our private information may be shared with. We are asked by the ACT Government, CASA and Project Wing (Google) to trust that all is well in this regard. Google has been reprimanded (and recently fined 50M euros in France) in several countries of late due to dishonest practices in regards to privacy. Would you trust Google with your private information? I certainly do not.:
<https://www.theverge.com/2019/1/21/18191591/google-gdpr-fine-50-million-euros-da>
16. This situation is outrageous and unacceptable. We were angry, outraged, frustrated and incredulous that no government agency was taking responsibility for regulation/compliance enforcement of the excessively loud noise of the drones.

- **The ACT Government, CASA, Airservices Australia and The ACT Environmental Protection Authority ALL told us that "NOISE WAS NOT WITHIN THEIR REMIT"!**
(See below "Human Rights"/"Privacy"/"ACT Government"/"The Extent of Regulatory Oversight of Drone Technology at Various Levels of Government Including But Not Limited To:"/"Noise"/"Health and Wellbeing")

- Upon investigation, it became apparent that the ACT Government was taking no responsibility for the trial and that there was no formal avenue of complaint. The ACT Government told people to refer their complaints to the company itself, Project Wing.
- I wrote letters to the Editor of The Canberra Times (attached) expressing my dissatisfaction with this situation. I went to a Tuggeranong Community Council Meeting where I expressed my outrage, anger and frustration to Liberal MLA Andrew Wall. Eventually I became part of the Bonython Against Drones (BAD) Action Group, and have since engaged in many activities aimed at helping the residents of Bonython have their many and serious objections to this drone trial voiced and heard.
- The other primary aim of this activity is to bring the ACT Government to account for its lack of taking responsibility for the Project Wing Bonython drone delivery trial, its lack of due diligence and governance in relation to this trial, and its lack of due and reasonable care and concern for its constituents, the residents of Bonython. **I consider the ACT Government's conduct in regard to all aspects of this trial to be seriously lacking in humanity, integrity, intelligence and leadership.**
- These activities have involved:
 1. Canvassing hundreds of Bonython residents whilst obtaining signatures for a petition which has now been presented to the ACT Legislative Assembly. This petition acquired over a thousand signatures from people who oppose the operation of Project Wing drones over their homes.
 2. In talking to these residents, 80% were opposed to the trial. These people were outraged, upset, angry and felt helpless and powerless. They felt they had been badly treated by the ACT Government. They felt like lab rats in a bad experiment.
 - They were angry there was no proper avenue of complaint and that they had not been consulted before the trial was imposed upon them against their will. They shared stories of their personal hardships because of the drone flights over their homes with me. They told me of various illnesses they had which were exacerbated by the constant intolerably loud noise and high pitched screaming of multiple drones around them, and how they lived in fear of the effect on their SERIOUS health conditions, eg PTSD, severe migraines, cancer. Shift workers talked of disrupted sleep and the detrimental effects on their health, and vulnerable people such as the elderly and people with babies expressed the same effects and concerns.
 - They were also upset at the effects of the drone activity on their pets and birdlife, which has been well documented.
 - They were outraged that their privacy was being intruded upon and compromised (with no recourse), as the drones have cameras constantly recording downwards.
 - They were angry and outraged that no government agency accepts responsibility for the noise of the drones, the privacy issues and that the ACT Government provides no authentic avenue for their complaints to be heard and dealt with.

3. Having media attention in mine and my family's life. The Project Wing Bonython drone trial is so controversial it has been the subject of much media attention - local, national and international. I was asked to participate in an interview with a Wall Street Journalist, local and national ABC television programs, a story on Channel 7 National News and on Channel 9's "A Current Affair". I was also asked to participate in a discussions on Canberra ABC talkback radio and have participated in others since.
 4. Various meetings, writing of correspondence and liaison with the community, family and friends.
- All of the above has involved a substantial amount of my time, energy and personal resources in addition to my already busy life (career, wife, mother).
 - I will now address the remaining Terms of Reference:
- **(1) (a) THE DECISION TO BASE THE TRIALS OF THE TECHNOLOGY IN THE ACT AND SURROUNDING REGION**
 - It is my understanding that Labor MLA Mick Gentleman spontaneously and unilaterally invited Project Wing to undertake the suburban drone delivery trial in the ACT. It has been reported that Minister Gentleman knows very little about the actual operation of the trial. This includes his knowledge of regulations, both Federal and ACT, which impact the trial, various responsibilities of Federal and ACT agencies and many other technical and practical aspects of the trial. As the Minister for The Environment and Heritage, Minister for Planning and Land Management and Minister assisting the Chief Minister on Advanced Technology and Space Industries, and the Minister who initiated the trial in the ACT, Mick Gentleman should be fully cognisant of all matters in relation to it. And as the Labor Party's Legislative Assembly representative of the electorate of Brindabella, which embraces Bonython, he has demonstrated a lack of due care and concern for his constituents, and has been unavailable for consultation often.
 - I believe Chief Minister Andrew Barr also demonstrated a level of ignorance in regards to the noise aspects of the drone trial, I heard him on ABC talkback radio stating words to the effect that the noise of a Project Wing drone is no different to the noise of a lawnmower. (This resulted in him being the subject of Pope's cartoon in The Canberra Times shortly thereafter). As someone who has had this noise inflicted on me against my will by Mr Barr's government, I can assure him the drone noise is nothing like that of a lawnmower and would refer him to a NASA study which explains that the noise of a drone is the most annoying noise of all to a human being - it is to do with matters of pitch, rebound noise and psychoacoustics. The study concluded:
 - **"THIS RESULT CASTS DOUBT ON THE IDEA THAT (DRONE) OPERATORS CAN EXPECT THEIR OPERATIONS TO BE GREETED WITH MINIMAL OPPOSITION...."** (theverge.com)
 - Also, people use lawnmowers once every week or two weeks, whereas the Barr Government seems to be envisaging drone use EVERYDAY. It is an absurd comparison to make.

- The drones' noise has been measured at 85 decibels from 35 metres during a neighbourhood delivery. The EPA limits residential noise to 45 decibels during the day and 35 decibels at night.
- The drone noise is **NOT REGULATED BY ANY ACT OR FEDERAL GOVERNMENT AGENCY**
(See below "**The Extent of Regulatory Oversight of Drone Technology at Various Levels of Government including etc**").
- As mentioned above, it appears the decision to base the trials in the ACT was made without consideration of the impact it would have on residents (basic human rights, health and wellbeing, privacy, noise, general amenity and their pets).
(See below "**Human Rights**"/"**Noise**"/"**Privacy**"/**Health and Wellbeing**").
- Also little, if any, consideration was given to the effects on birds and other wildlife in the region - one of the main attractions for many people who choose to live in Bonython. (See below "**Effects on Wildlife**").
- Project Wing conducted a drone delivery trial in the more remote NSW area of Royalla, just outside the ACT, prior to conducting the Bonython "trial". Project Wing's PR claims the Royalla trial as a success. Feedback to BAD from Royalla residents who experienced it says there was much opposition to the drones. BAD was told that these people felt that their complaints and concerns were completely ignored.
They also reported that their livestock was terrified by the drones and would run in panic in their presence.
- There was no consultative process involving Bonython residents, nor was their approval sought. Nor were any Tuggeranong businesses consulted or afforded the same opportunity.
- The terms of the trial were unclear. Project Wing stated it:
"envision[s] a future where drone delivery is the safest, fastest and most environmentally friendly mode of small item transport, and everyone can benefit from having commonly-needed goods available to them".
- This statement has no relevance for unwilling participants in a delivery trial.
- It is believed the decision to conduct the Project Wing drone delivery trial in the ACT was initiated by the ACT Government (Mick Gentleman) and Google X. Extracts from Hansard clearly indicate that this delivery trial is **AN EXPERIMENT IN MANAGING AIRSPACE AND DEVELOPING DRONE TECHNOLOGY**. No other State or Territory in Australia has allowed such a drone delivery trial to take place. **NO COUNTRY IN THE WORLD PERMITS SUCH DRONE OPERATIONS BECAUSE OF SAFETY CONCERNS AND RISKS TO THE GENERAL PUBLIC**. (See below "**Safety Concerns That Have Arisen from the Trial**").
- As explained, Project Wing is a US company, affiliated with the giant conglomerate Google. They are not permitted, under the regulations of the US Federal Aviation

Agency (FAA) to conduct such experiments on Americans in their own country because it is deemed unsafe by the the FAA. (See below "**Federal Government**").

- The delivery of food and chemist items is a ruse on the part of the ACT Government. Bonython residents, including myself, feel that our intelligence has been insulted. We are well aware we are guinea pigs in an unsafe, irresponsible, inappropriate and unacceptable experiment by the ACT Government and Project Wing and we are outraged and incredulous that the ACT Government would deliberately expose its constituents to such an outrageous and egregious invasion of our basic human rights, privacy and the sanctity of our homes.
- The Risk Management document, obtained under FOI, of the Risk Assessment, Risk Evaluation and Risk Treatment Plan conducted by the ACT Government and CASA prior to the implementation of the trial, reveals that **the ACT GOVERNMENT WAS FULLY AWARE OF THE MANY SERIOUS RISKS/IMPACTS/CONSEQUENCES OF SUCH A DRONE DELIVERY TRIAL, BUT WENT AHEAD WITH IT WITHOUT ADDRESSING THEM.** (I would refer the Inquiry to this Risk Management document - See "**ACT Government**" below).
- The decision to conduct the Project Wing drone delivery trial in the ACT, and the way it has been implemented and conducted, calls into question the integrity, veracity and credibility of the ACT Government. A responsible, ethical, humane and accountable Government, having identified the many serious risks, impacts and consequences of such a trial, would not have proceeded until **ALL** matters had been addressed.
- The decision to base the trial of the technology in the ACT and surrounding region by the ACT Government smacks of them having been seduced by the big money of an American conglomerate and the idea of gaining international recognition for innovation. (Project Wing/ACT Government PR constantly refers to the Bonython trial as a "world first").
- The reality is the ACT Government is running roughshod over its constituents in an outrageous exercise in appalling corporate greed and lack of due care and concern for the people.
- As stated above, I consider the ACT Government's conduct in regard to all aspects of the Project Wing Bonython drone trial to be seriously lacking in humanity, integrity, intelligence and leadership.

1.(c) THE EXTENT OF REGULATORY OVERSIGHT OF DRONE TECHNOLOGY AT VARIOUS LEVELS OF GOVERNMENT INCLUDING BUT NOT LIMITED TO:

(i) Local Authorities Such As:

The Environment Protection Authority (EPA)

- Accepts/has no responsibility for the noise of the drones. The Environment Protection Act 1997, Section 8, specifically does not apply to "Aircraft" (manned or unmanned).

- The drone noise has been measured at **80 DECIBELS** at a neighbourhood fence boundary during a delivery. EPA residential noise limits are **45 DECIBELS** during the day and **35 DECIBELS** at night.

Worksafe - Have nothing to do with the Project Wing Bonython drone trial.

ACT Parks and Wildlife

- Granted Project Wing a licence for the drone trial to operate over the relevant parks and reserves in the Bonython area, including Pine Island, on condition that Project Wing undertook an avian study. **IT CANNOT BE CONFIRMED IF THE STUDY WAS UNDERTAKEN OR NOT AS PROJECT WING SAID THEY WOULD NOT MAKE THE STUDY AVAILABLE TO EITHER THE PUBLIC - OR THE ACT GOVERNMENT.**
- **THE ACT GOVERNMENT IS FAILING TO FOLLOW UP ON/ENFORCE ANY OF THE REQUIREMENTS IMPOSED ON PROJECT WING IN ORDER THAT IT MAY SAFELY AND LEGALLY CONDUCT ITS DRONE DELIVERY OPERATIONS OVER BONYTHON.** (See below "ACT Government").

Access Canberra

- Received many complaints
- Access Canberra staff said the complaints were outside their "normal business" and incorrectly referred people to CASA .
- **NO ONE IN THE ACT GOVERNMENT KNEW WHAT TO DO WITH/ABOUT PEOPLE'S COMPLAINTS ABOUT THE PROJECT WING BONYTHON DRONE OPERATIONS.**

The ACT Government

- **THE ACT GOVERNMENT INSTIGATED THE PROJECT WING BONYTHON DRONE TRIAL WITH FULL KNOWLEDGE THAT A 2016 FEDERAL GOVERNMENT INQUIRY ('REGULATORY REQUIREMENTS THAT IMPACT ON THE SAFE USE OF REMOTELY PILOTED AIRCRAFT SYSTEMS, UNMANNED AERIAL SYSTEMS AND ASSOCIATED SYSTEMS') IDENTIFIED SIGNIFICANT GAPS IN REGULATORY AND OVERSIGHT CONTROLS AT ALL LEVELS OF GOVERNMENT OF DRONE OPERATIONS IN AUSTRALIA, BUT WENT AHEAD WITH IT ANYWAY.** (see below "Federal Government").
- **The ACT Government conducted the Risks Assessment (referred to above in 1. (a) in concert with CASA, as revealed in documents obtained under FOI.**

The following risks were identified, AS THEY APPEAR IN THIS RISKS ASSESSMENT:

- **NOISE: "Delivery drones emit a high-pitched buzzing noise.**

IMPACT: Reduction in peace and quiet, community complaints/Tortious action - nuisance against the Territory: *Environment Protection Act 1997 (ACT)* implications".

ACTION TAKEN: NONE

- **PRIVACY CONCERNS: "a) surveillance and intrusion of privacy
b) inappropriate collection, use and disclosure of personal information**

The delivery drones are constantly taking downward photos.

This may intrude on a person's reasonable expectation of privacy, eg, backyards, schoolyard, private land.

Project Wing advise that these photos are not stored (it has since been revealed that Project Wing indeed do store photos, send them back to the USA, where they are kept for 30 days. See above).

- **Amazon is reported to have recently taken out a patent - their drones would collect information on the state of someone's property, which would then support targeted advertising.**

IMPACT: Potential breach of right to privacy (in ACT Human Rights Act)

Potential breach of *ACT Information Privacy Act* requirements

Reduced privacy, with community privacy concerns and complaints.

No recognised common law action in tort for breach of privacy - yet - however that does not mean that a particularly aggrieved applicant may not attempt to bring an action in tort - for instance, that "privacy" be an issue that arises alongside a trespass action".

ACTION TAKEN: NONE

- **IMPACT ON DOMESTIC PETS: "Delivery drones may startle domestic pets, who then may, for example, jump over a fence and get lost.**

IMPACT: Harm to domestic pets, and community complaint. Tortious action - nuisance EPA implications".

ACTION TAKEN: NONE

- **IMPACT ON WILDLIFE: "Drones have the potential to cause stress to wildlife:
there is limited evidence of the extent of this impact.**

IMPACT: Harm to wildlife with ecological damage".

ACTION TAKEN: NONE

- **LOSS OF AMENITY - VISUAL AND NOISE POLLUTION**

"To some people drones will be perceived as a disturbance to peace and quiet, affecting reasonable enjoyment.

Areas such as nature reserves and national parks may present a reasonable expectation of peace and quiet.

IMPACT: Loss of amenity and enjoyment, community complaints. Nuisance".

ACTION TAKEN: NONE

- Anxiety and stress levels are increasing every time people hear a drone fly over. This effect has been so extreme as to cause death threats to be made to Project Wing, as reported by ACT Police.
- Some young children are too scared to go outside when the drones are present.
- Shift workers, babies and other vulnerable people have their sleep disturbed. People get woken up from sleep by the drones.
- People's serious illnesses are exacerbated/recovery and healing delayed eg PTSD/cancer. People with chronic migraines report living in fear of the condition being triggered by the extremely loud and high pitched drone noise.
- **DRONES CONSTANTLY FLYING AT LEVELS OF 20 TO 30 METRES OVER PEOPLE'S BACKYARDS, MAKING A HIGH-PITCHED SCREAMING NOISE OF UP TO 85 DECIBELS, IS AN OUTRAGEOUS, INTOLERABLE AND UNACCEPTABLE VIOLATION OF THEIR PEACE, PRIVACY AND BASIC HUMAN RIGHTS. (See below "Human Rights")**

- **CYBER SECURITY: "The drones are highly automated, and in the future may have limited supervision/control.**

IMPACT: Drones used for a malevolent purpose. Uncertain/unknowable impact.

REGULATORY BODY OVERSIGHT: CASA - can review security of systems (but note: limited cyber security-specific expertise. Australian Government (general policy concern for the future)".

ACTION TAKEN: NONE THAT WE ARE AWARE OF

- **SENSITIVE LOCATIONS - GEOGRAPHICAL ISSUE:**

"Drones may fly over a sensitive location such as an embassy, school, hospital or jail."

IMPACT: Uncertain impacts - potential for concern from some elements of the community.

ACTION TAKEN: TO BE ADVISED

- **DISTRACTION RISK TO DRIVERS, CYCLISTS, PEDESTRIANS:**

"Delivery drones may distract drivers, cyclists, pedestrians.

We understand that there may have been discussions regarding a tortious action in negligence to the ACT Government for having approved the use of the land for this commercial drone trial.

IMPACT: Reduced traffic safety".

Also, potential for injury and death.

ACTION TAKEN: NONE THAT WE ARE AWARE OF

- **SAFETY - COLLISION WITH PEOPLE, INFRASTRUCTURE AND OTHER DRONES/PLANES:**

"THE DELIVERY DRONES MAY CRASH INTO SOMETHING FOR ANY NUMBER OF REASONS. THIS INCLUDES THE POTENTIAL FOR COLLISION WITH PEOPLE DURING THE PICK-UP-DROP-OFF POINT.

IMPACT: INJURY/DAMAGE TO PEOPLE/PROPERTY

ACTION TAKEN: "CASA regulates the operational requirements (CASA Regs part 101)"

- The ACT Government allows Project Wing to self-report. There is no independent body to regulate Project Wing. A number of concerning safety incidents have been reported to BAD, which are not acknowledged by Project Wing, CASA or the ACT Government. A motorist reported that a drone was blown by wind on to their car which nearly caused them to have an accident. It was reported that a hot chocolate was delivered to a wrong address and the residents arrived home to find hot chocolate spilt over their driveway. What if this was pharmacy medicine and it got into the hands of a child? People don't have to be home for deliveries to be made. (See "**Safety**" below for further issues/concerns).

- **LAND USE CONCERNS:**

"DELIVERY DRONES ARE NOT CURRENTLY DEFINED IN THE TERRITORY PLAN, THUS NOT PERMITTED EXCEPT UNDER A TEMPORARY USE.

Property owners may not be happy to have a delivery drone site next door or nearby.

IMPACT: "CRITICISM OF THE ACT GOVERNMENT AROUND OUR PLANNING CONTROLS, AND WHY WE ARE PERMITTING DELIVERY DRONES WITHOUT FIRST CHANGING OUR PLANNING LEGISLATION".

ACTION TAKEN: NONE THAT IS KNOWN.

- Project Wing states in the media it is setting up a **PERMANENT** base in Mitchell. Why does the ACT Government allow this? Is it legal? Also, Why is Project Wing permitted to conduct commercial operations over a public nature reserve?

- **TRESPASS: "DELIVERY DRONES MAY IMPACT ON A LANDHOLDER'S RIGHT TO EXCLUSIVE USE OF REASONABLE AIRSPACE ABOVE THEIR OWN PROPERTY.
(CASA DOES NOT RECOGNISE RIGHTS TO REASONABLE AIRSPACE ABOVE A PROPERTY FROM THE REGULATORY POSITION).**

IMPACT: Tort of trespass - legal liability".

ACTION TAKEN: UNKNOWN

- **ACT GOVERNMENT AGENCY OBJECTIONS:**

"Other government agencies may raise concerns about drone use near or above their sites (eg. Alexander Maconochie Centre, schools, other institutions).

**IMPACT: Opposition from other ACT Government agencies.
Limited operational areas".**

ACTION TAKEN: UNKNOWN

**FIRE IGNITION: "DELIVERY DRONE CRASH/MALFUNCTION CAUSING FIRE
(OR BUSHFIRE).**

IMPACT: FIRE IGNITION".

**ACTION TAKEN: DRONES ARE NOT ALLOWED TO OPERATE DURING
PERIODS OF TOTAL FIRE BAN".**

**NEGLIGENCE: "NEGLIGENT OPERATION OF DRONES MAY CAUSE INJURY,
DEATH, DAMAGE TO PERSONS.**

**IMPACT: TORT OF NEGLIGENCE - LEGAL LIABILITY FOR ALLOWING LAND
USE".**

ACTION TAKEN: UNKNOWN

- **REPUTATIONAL DAMAGE:**

**"IF THE PROJECT IS NOT SUPPORTED BY THE COMMUNITY, OR THERE IS
AN INCIDENT OR ACCIDENT, THE ACT GOVERNMENT MAY BE HELD
RESPONSIBLE - OR FOR INSTANCE FACE ADVERSE PUBLIC COMMENT OR
ADVERSE FINDINGS IN THE EVENT OF A CORONIAL INQUEST.
NOT BEING AWARE OF INCIDENTS OCCURRING.**

**NOTE: CASA MAY FACE A SIMILAR REPUTATIONAL RISK IN TERMS OF
THEIR ROLE IN PROVIDING REGULATORY APPROVAL.**

**IMPACT: WHILE LEGAL LIABILITY MAY NOT REST WITH THE ACT
GOVERNMENT FOR A SAFETY INCIDENT, REPUTATIONAL DAMAGE MAY BE
SUFFERED AS THE ACT GOVERNMENT HAS ALLOWED THE PROJECT TO
TAKE PLACE".**

ACTION TAKEN: NONE

- The ACT Government has allowed Project Wing to self-assess and self-report and undertake their own review of the Bonython drone delivery trial. Project Wing state they will not release trial feedback, either publicly or to the ACT Government. They will only provide a summary.

- The ACT Government provides no formal avenue for complaint/nor does it acknowledge residents 'valid concerns. Both the ACT Government and CASA received complaints and failed to respond to many of them.

- **IT IS A DEMONSTRATION OF THE CAVALIER IRRESPONSIBILITY, RECKLESSNESS AND LACK OF DUE CARE AND CONCERN FOR ITS CONSTITUENTS OF THE ACT GOVERNMENT THAT IT ALLOWED THE BONYTHON TRIAL TO PROCEED IN FULL KNOWLEDGE OF THE ABOVE RISKS/IMPACTS/CONSEQUENCES WITHOUT ADEQUATELY ADDRESSING THEM OR NOT ADDRESSING THEM AT ALL.**
- The reputation of the ACT Government has been seriously damaged by its conduct in relation to **ALL** matters pertaining to the initiation, implementation, regulation and compliance enforcement of the Project Wing Bonython drone trial.
- The integrity of the ACT Government has been seriously called into question. It is seen by people as lacking due care and concern for its constituents in the pursuit of corporate greed and international recognition.
- **LACK OF REGULATION AND COMPLIANCE ENFORCEMENT BY THE ACT GOVERNMENT OVER THE TRIAL AND PROJECT WING**
 - The Federal Government announced in May 2018 it would make additional money available to CASA to enable it to develop appropriate compliance measures for drone operations. (See below **"Federal Government"**):
 - **IT IS A FURTHER DEMONSTRATION OF THE CAVALIER IRRESPONSIBILITY AND RECKLESSNESS OF THE ACT GOVERNMENT THAT IT ALLOWED THE BONYTHON TRIAL TO PROCEED IN FULL KNOWLEDGE THAT CASA'S COMPLIANCE ENFORCEMENT RESOURCES WERE INADEQUATE/NON-EXISTENT IN RELATION TO DRONES, AND SPECIFICALLY THE PROJECT WING BONYTHON DRONE TRIAL.**
 - The drone industry and its regulations are still in their infancy. CASA announced only a few weeks ago, in January 2019, the requirement that all drones must be registered.
 - Even though drones are aircraft and all civil aircraft are required to be issued with Certificates of Airworthiness, current regulations do not require the same of drones. Therefore, under current law, the drones used in the Project Wing Bonython delivery trial and those that will be used in all future Project Wing drone operations (their media PR tells us they envisage **"600,000 flights over the ACT"**) are not required to undergo the safety checks involved in the issuing of Certificates of Airworthiness, and up until January, were not even required to be registered.
 - From the point of view of safety of the people over whom the drones fly at low levels and in close proximity, this situation is unacceptable.
 - It is reiterated, the ACT Government has allowed Project Wing to self-assess and self-report and undertake their own review of the Bonython drone delivery trial. Project Wing state they will not release trial feedback, either to the public or to the ACT Government. They will only provide a summary.

- **An independent audit should be conducted of the trial to ensure the veracity of its/Project Wing's results/reporting.**
- There is evidence Project Wing makes false statements to the media and in their own reporting.
- **A FURTHER EXAMPLE OF THE ACT GOVERNMENT'S CAVALIER AND IRRESPONSIBLE ATTITUDE IN REGARDS TO PROJECT WING DRONE OPERATIONS IN THE ACT IS THAT AN EXPANSION OF PROJECT WING'S DRONE OPERATIONS IS PROPOSED TO ALLOW DRONE DELIVERIES TO THE NORTH CANBERRA SUBURBS OF CRACE, FRANKLIN, GUNGAHLIN, HARRISON AND PALMERSTON FROM A "PERMANENT" (SO PROJECT WING PR TELLS US) BASE IN MITCHELL:**
 1. **Despite the fact that there has been no evaluation process of/report on the Bonython trial.**
 2. **Project Wing has not been required to present its data from the trial to either the public or the ACT Government, saying they will only release a "Summary" at the conclusion of the Bonython trial.**
 3. **Despite the many adverse impacts and complaints from the Bonython trial.**
 4. **Despite the fact that this Inquiry is in place.**
- The ACT Government is failing to protect the public by failing to exercise due diligence, governance and compliance enforcement of the Project Wing drone operations in the ACT. It is failing in its duty of care to its constituents. It is acting irresponsibly and unethically, without humanity, integrity, intelligence and leadership.

1.(c)(ii) COMMONWEALTH AGENCIES SUCH AS AIRSERVICES AUSTRALIA AND CIVIL AVIATION SAFETY AUTHORITY

Airservices Australia

- States that it has no responsibility for unmanned aircraft - **DRONES**

Civil Aviation Safety Authority (CASA)

- Has responsibility for the regulatory and safety aspects of the Project Wing drone operations.
- Documents obtained under FOI from CASA reveal that CASA issued an Exemption to Regulations that apply to all other drone operators in Australia, ie, that a drone cannot operate within 30 metres of a person. **THIS EXEMPTION - CASA INSTRUMENT NO. EX82/18 SECTION 7 SUBSECTION (1) (d) (iv) EXEMPTION TO CASR PART 101 - REMOTELY PILOTED AIRCRAFT OPERATION OVER BONYTHON (UNMANNED SYSTEMS AUSTRALIA PTY LTD) EXEMPTION 2018** - issued to Project Wing by CASA to conduct deliveries

to homes in Bonython allows its drones to operate within **5 METRES OVERHEAD A PERSON AND 2 METRES HORIZONTAL DISTANCE FROM A PERSON.** (See attachment). **NO OTHER GOVERNMENT IN THE WORLD ALLOWS THIS.** No trials have been conducted to ensure the safety of people subjected to such drone operations. The residents of Bonython are guinea pigs:

An article by Marco Margaritoff @MARCOMC2 (AUG 8, 2018), "**Project Wing Completes First Long-distance, Residential Drone Delivery in US**" explains:

"WING SUCCESSFULLY DELIVERED ICE CREAM TO THE SUBURBS VIA UAV."

- **THAT IS CORRECT. UNDER CURRENT US FEDERAL AVIATION ADMINISTRATION (FAA) - REGULATIONS, THE EXTENT OF PROJECT WING'S LEGAL ABILITY TO CONDUCT SUBURBAN DRONE DELIVERIES IS ICECREAM TO ONE HOME IN THE CONTROLLED CONDITIONS OF THE VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY (VIRGINIA TECH) - A RESEARCH UNIVERSITY:**
<http://amp.timeinc.net/thedrive/tech/22730/project-wing-completes-first-long-distance-residential-drone-delivery-in-us?source=dam>)
- **THAT IS WHY THE RESIDENTS OF BONYTHON FEEL UNSAFE, VIOLATED AND ANGRY.**
- A technical expert with over eight years' experience writing CASA Regulations advises that the wording of the Exemption is unclear and leaves the trial open to having its veracity - **IF NOT ITS LEGALITY** - questioned. Correspondence between the BAD Action Group and CASA has been exchanged. (Attached). **THE ACTION GROUP IS UNSATISFIED WITH CASA'S RESPONSE IN REGARDS TO THIS MATTER AND HAS SOUGHT LEGAL ASSISTANCE WITH IT.**
- Project Wing and the ACT Government tell us this trial is a world-first. Therefore, with the world's aviation/drone industries scrutinising it, it is important that the wording of the Exemption is accurate.
- CASA advises the public that **NEITHER NOISE REGULATION NOR PRIVACY ISSUES ARE WITHIN ITS REMIT.**
- **NO GOVERNMENT AGENCY, EITHER ACT OR FEDERAL, IS RESPONSIBLE FOR REGULATING THE EXCESSIVE AND SUBSTANTIAL NOISE OF THE DRONES, OR FOR ENSURING THAT THE PRIVACY OF THE RESIDENTS WHO HAVE BEEN SUBJECTED TO THE PROJECT WING DRONE OPERATIONS IS PROTECTED.** (See below "Privacy"/"Human Rights")
- **THERE IS A SERIOUS LACK OF REGULATORY OVERSIGHT AT ALL LEVELS OF GOVERNMENT WHICH ALLOWS THE EXCESSIVE AND SUBSTANTIAL NOISE,**

RECORDED AT 85 DECIBELS FROM 35 METRES, TO BE UNREGULATED AND WHICH ALLOWS THE SERIOUS ISSUE OF PRIVACY TO BE UNREGULATED.

The Federal Government

- Set up an Inquiry into the Regulatory Requirements that Impact on the Safe use Of Remotely Piloted Aircraft Systems (RPAS), Unmanned Aerial Systems (UAVS) and Associated Systems in October 2016. See the Recommendations of this Inquiry:

https://www.aph.gov.au/parliamentary_Business/Committees/Senate/Rural_and_Regional_Affair_and_Transport/Drones

Documents have been obtained under FOI of the Federal Government's submission to the above Inquiry. Many issues were identified in it regarding serious deficits in regulation/other deficits/problems/concerns in regard to current operation of drones (RPAS/UAVS) in Australia. The Federal Minister for Transport, Infrastructure and Regional Development, The Hon. Michael McCormack MP, responded to correspondence from BAD about this as follows:

- **"THE RESPONSE AGREES WITH THE RECOMMENDATION TO DEVELOP A WHOLE OF GOVERNMENT APPROACH TO RPAS IN AUSTRALIA. THE DEPARTMENT OF INFRASTRUCTURE, REGIONAL DEVELOPMENT AND CITIES WILL LEAD THIS WORK WITH RELEVANT DEPARTMENTS AND AGENCIES TO DEVELOP A CLEAR VIEW ON THOSE MATTERS THAT FALL OUTSIDE OF THE CIVIL AVIATION SAFETY AUTHORITY'S REMIT: INCLUDING PRIVACY, NOISE AND ENVIRONMENTAL IMPACTS. IT IS THE INTENT THAT THIS WORK WILL HELP TO CLARIFY FOR THE PUBLIC, THE SEPARATE AREAS OF RESPONSIBILITY IN RELATION TO DRONE ISSUES."**
- The Federal Government announced in May 2018 it would make additional money available to CASA to enable it to develop appropriate compliance measures for drone operations. (See above "ACT Government").
- **IT IS A FURTHER DEMONSTRATION OF THE CAVALIER IRRESPONSIBILITY AND RECKLESSNESS OF THE ACT GOVERNMENT THAT IT ALLOWED THE BONYTHON TRIAL TO PROCEED IN FULL KNOWLEDGE THAT CASA'S COMPLIANCE ENFORCEMENT RESOURCES WERE INADEQUATE/**
- **IT IS REITERATED THAT THE ACT GOVERNMENT INSTIGATED THE PROJECT WING BONYTHON DRONE TRIAL WITH FULL KNOWLEDGE THAT A 2016 FEDERAL GOVERNMENT INQUIRY ('REGULATORY REQUIREMENTS THAT IMPACT ON THE SAFE USE OF REMOTELY PILOTED AIRCRAFT SYSTEMS , UNMANNED AERIAL SYSTEMS AND ASSOCIATED SYSTEMS') IDENTIFIED SIGNIFICANT GAPS IN REGULATORY AND OVERSIGHT CONTROLS AT ALL LEVELS OF GOVERNMENT OF DRONE OPERATIONS IN AUSTRALIA, AND WENT AHEAD WITH IT ANYWAY.**

1.(d) THE EXTENT OF ANY ENVIRONMENTAL IMPACT AS A RESULT OF TRIALLING DRONE DELIVERY TECHNOLOGY ON:

(i) Residents (see above)

(ii) Native Wildlife

- The beautiful birds (rosellas/galahs/cockatoos and others) that loved to visit our garden, and that we love, disappeared - a widespread occurrence throughout Bonython
- During a 2 week break from drone deliveries over Christmas/New Year, they returned.
- BAD met with someone from the Avian Society, who advised that many wildlife species, including swans, had either disappeared or greatly diminished in number from Stranger Pond.
- The prolific kangaroo population from Pine Island moved away
- Currawongs were observed trying to attack the drones on a regular basis, and a magpie was filmed doing so.

(iii) Domestic Animals

- Dogs were constantly barking at the drones
- Cats were behaving fearfully

(iv) Greenhouse Gas Emissions

- Project Wing falsely claims that their drones will reduce carbon footprint.:
<http://www.washington.edu/news/2017/05/30/drone-vs-truck-deliveries-which-create-less-carbon-pollution/> (Professor Goodchild Riot Act)
tells us that drones only have a reduced carbon footprint when flying short distances, have few delivery stops and have a light load.
- **In fact the drones negatively impact the environment by generating excessive noise pollution and packaging waste from excessive “fast” food deliveries.**
- Research shows that electric cars/trucks (large and small)/pushbikes are more efficient, environmentally (and people) friendly delivery modes and have a more efficient carbon footprint than drones.

1.(b) THE ECONOMIC IMPACT OF DRONE DELIVERY TECHNOLOGY BEING TESTED IN THE ACT INCLUDING:

(i) Investment That Has Been Brought Into The Territory

Claims of investment being brought into the Territory by the Project Wing drone operations are dubious. During the Bonython trial:

1. Delivery was free/they employed a small number of people/they had to pay a licence fee to operate. It could only have been a **FINANCIALLY NEGATIVE** operation.
2. No new business was generated. Project Wing used national chains, such as Guzman y Gomez/Chemist Warehouse. They state their projections are based on taking business from existing deliverers, ie, Uber Eats/Deliveroo.

3. Local businesses - chemists/takeaways - (who actually contribute to the ACT economy) - were not happy and felt Project Wing was threatening to their business and revenue, e.g. less foot traffic. A local chemist told me he felt the trial was unethical in its conduct and ethos. **(He also told me that for the duration of the trial he had heard many complaints from the public about it and not one positive comment).**
 4. Only loads of up to 1.5 kg can be delivered. Two drone flights over hundreds of homes (disturbing several hundred people) to deliver one cup of coffee is not a viable business/financial model - to say the least.
 5. Delivery drivers/riders, who contribute to the ACT economy, will in fact be put out of work by Project Wing drone operations.
- Project Wing is a subsidiary of the American conglomerate Google. The Licence for the Project Wing drones to operate in the ACT (documents obtained under FOI) reads:
**“LICENCE
Between
AUSTRALIAN CAPITAL TERRITORY
and
GOOGLE AUSTRALIA PTY LTD”**

How do we know the revenue from Project Wing operations is not referred overseas?

- **All of the above suggests that the Project Wing drone delivery trial in Bonython delivered a financial deficit and a goodwill deficit. It delivered no new investment to the ACT.**
- **PROJECT WING WON'T RELEASE ANY OF ITS BONYTHON DELIVERY TRIAL RESULTS/FEEDBACK. IT IS THEREFORE IMPOSSIBLE TO VERIFY AT THIS TIME IF IT BROUGHT NEW INVESTMENT TO THE ACT.**
- **I believe the Project Wing Bonython drone delivery trial represents an unreliable BUSINESS MODEL which applies to any and all of its drone delivery operations as follows. Drones cannot operate:**
 - During a total fire ban
 - In adverse weather conditions including high winds, storms and rain.
 - At night time
 - Within 5 km of an airport
 - Within areas of national significance, ie Parliamentary Triangle etc
 - Over public areas, such as parks, schools, sports grounds etc.
 - To high rise buildings
 - Other high density residences, such as units, aged care facilities etc,
 - Where parcels being delivered require signatures/special conditions
 - Only deliver up to 1.5 kg requiring multiple flights which greatly increases noise pollution and privacy invasion

(ii) Number of jobs that have been created as part of the trial

- As stated above, a small number of jobs were created and the potential for job losses in local and associated businesses (courier/other delivery services such as Uber Eats/Deliveroo) exists as a result of the Project Wing drone operations.

(iii) Extent of collaboration with local industry and academic institutions

- My understanding is that the extent of Project Wing's collaboration with local industry is minimal and collaboration with academic institutes is non-existent.

1.(e) WAYS TO IMPROVE THE USE OF DRONE DELIVERY TECHNOLOGY WITHIN THE ACT

- I believe the use of drones for farming/wildlife research/search and rescue/other emergency services/land surveying/surveying fires/inspecting power lines etc. are of benefit to humankind, if conducted legally and with respect for people, wildlife and the environment. **I do not believe the Project Wing Bonython drone delivery trial falls into this category.**
- **I believe the negative impacts of the Project Wing Bonython drone delivery trial, as clearly outlined in this submission, far outweigh anything positive this drone delivery trial has to offer.**

1.(f) ANY OTHER RELEVANT MATTER

SAFETY CONCERNS THAT HAVE ARISEN FROM THE TRIAL

- People feel unsafe because the drones are able to fly so close to them. They are concerned about unforeseen circumstances, such as their children running too close to them, or an accident occurring and injuring them
- People are concerned that the drones may hit powerlines and cause death or injury to them, or start bushfires, especially in the current extreme heat condition
- People have noticed the drones look unstable in windy conditions and feel that they could be blown on to them.
- A drone actually was blown on to a car, nearly causing the driver to have an accident.
- Even though drones are aircraft and all civil aircraft are required to be issued with Certificates of Airworthiness, current regulations do not require the same of drones. Therefore, under current law, the drones used in the Project Wing Bonython delivery trial and those that will be used in all future Project Wing drone operations (their media PR tells us they envisage **"600,000 flights over the AC T"**) are not required to undergo the safety checks involved in the issuing of Certificates of Airworthiness, and up until January, were not even required to be registered.
- There is the possibility of medications being wrongly delivered, like the hot chocolate example mentioned already. They may fall into the hands of children for example, which is dangerous.

- The idea of hot liquids and heavy objects (Bunnings?) flying at 120 kph at heights of 20 to 30 metres over people's (including children's) heads, is another cause of serious concern, anxiety and distress to people.
- **FROM THE POINT OF VIEW OF SAFETY OF THE PEOPLE OVER WHOM THE DRONES FLY AND THE ENVIRONMENT IN WHICH THEY LIVE, THIS SITUATION IS UNACCEPTABLE.**
- The Societal Impact of Commercial Drones (Technology in Society; May 2016, A.Gopi): https://www.researchgate.net/publication/298427201_The-societal_impact_of_commercial_drones
is a discourse which details the many safety and regulatory problems/challenges that exist with the commercial operation of drones. **(See Table 1: Key Challenges of UAVs and their Mitigation attached).**
- I was told in a casual conversation that recreational drone users in the ACT are not happy with the Project Wing drone trial as they feel it gives all drones a bad reputation.

PRIVACY CONCERNS THAT HAVE ARISEN FROM THE TRIAL

- The drones fly and hover 20 to 30 metres over people's homes, with down-facing cameras constantly recording. Project Wing have stated that the recorded images are **SENT BACK TO THE USA AND STORED FOR 30 DAYS**. People have no way of knowing what actually happens to these images, if they are shared with third parties etc. There is no open and transparent management of personal information collected. **THIS CONSTITUTES SURVEILLANCE AND UNACCEPTABLE INTRUSION INTO PEOPLE'S PRIVACY AND LIVES. IT RESTRICTS THEIR ACTIVITIES IN THEIR OWN BACKYARDS.** People have reported a reluctance to disrobe for fear of photographed and are also reluctant to let their children be naked in their own backyards - one of the freedoms that all children should be able to enjoy. (See below **"Human Rights"**).
- **THIS IS AN OUTRAGEOUS AND UNACCEPTABLE (IF NOT ILLEGAL) SITUATION WHICH CAUSES THE RESIDENTS OF BONYTHON MUCH ANGER AND ANXIETY.**
- **THE FOLLOWING IS A FURTHER EXCERPT FROM "THE ACT GOVERNMENT/CASA RISK MANAGEMENT REPORT" (OBTAINED UNDER FOI) AS REFERRED TO ABOVE : "THE ACT GOVERNMENT"):**

"PRIVACY CONCERNS:

IMPACT/OUTCOME:

- **POTENTIAL BREACH OF RIGHT TO PRIVACY (IN ACT HUMAN RIGHTS ACT)**
- **POTENTIAL BREACH OF ACT INFORMATION PRIVACY ACT REQUIREMENTS**
- **REDUCED PRIVACY, WITH COMMUNITY PRIVACY CONCERNS AND COMPLAINTS**
- **NO RECOGNISED COMMON LAW ACTION IN TORT FOR BREACH OF PRIVACY - YET- HOWEVER THAT DOES NOT MEAN THAT A PARTICULARLY AGGRIEVED APPLICANT MAY ATTEMPT TO BRING AN ACTION IN TORT - OR FOR INSTANCE, THAT "PRIVACY" BE AN ISSUE THAT ARISES ALONGSIDE A TRESPASS ACTION**

RISK CONTROLS WHICH ARE CURRENTLY IN PLACE:

(potentially PW not caught by either instrument - to be bound to the Commonwealth Act by opt-in or contractually. ..)

ACTION TO BE TAKEN:

1. ACT Government to require Project Wing to develop and make public a privacy policy which complies with either the Commonwealth Privacy Act of the ACT's Information Privacy Act.
2. ACT Government to require Project Wing to address this concern as part of the community engagement strategy.

MONITORING AND REVIEWING:

ACT Government - Monitor and seek feedback from the community."

- **NONE OF THE ABOVE HAS OCCURRED. PROJECT WING HAS NOT MADE ANY PRIVACY POLICY PUBLIC, NOR WAS IT MADE PART OF A COMMUNITY CONSULTATIVE PROCESS - AS THERE WAS NONE FOR ANY ASPECT OF THE BONYTHON TRIAL.**
- **THE ACT GOVERNMENT HAS NOT BEEN MONITORING AND REVIEWING OR SEEKING FEEDBACK FROM THE COMMUNITY ON THEIR PRIVACY CONCERNS, WHICH ARE SERIOUS AND CONSIDERABLE AS STATED ABOVE.**
- **THE ACT GOVERNMENT TELLS COMPLAINANTS TO ADDRESS ALL THEIR CONCERNS TO PROJECT WING.**
- **PROJECT WING SAYS THEY WILL NOT RELEASE ANY INFORMATION TO THE PUBLIC (AND VERY LITTLE TO THE ACT GOVERNMENT).**
- **CASA TELLS US PRIVACY IS NOT THEIR REMIT.**
- **THIS IS CLEARLY A NEGLIGENT, OUTRAGEOUS AND UNACCEPTABLE STATE OF AFFAIRS.**

THE EFFECTS OF DRONES ON THE HEALTH AND WELLBEING OF PEOPLE

- There is much research that confirms drones adversely impact the health and wellbeing of human beings, this includes physical, mental and emotional health, as follows:

**hearing impairment/hypertension/ischaemic heart
disease/annoyance/anxiety/stress/neurosis/hysteria/psychosis/sleep
disturbance/tinnitus/changes in the immune system/birth defects**

- Health and Psychological Effects of Noise Pollution (Dr. Roy Aranda)
<https://royaranda.wordpress>
- Health Effects from Noise (Wikipedia)
https://en.m.wikipedia.org/wiki/Health_effects_from_noise

- From having the dubious opportunity to observe what was going on with an immediate neighbour getting up to twenty drone deliveries a day, I have concluded the following. Suburban drone deliveries have the following adverse effects:
 - Encourage indolence and obesity
 - Adversely impact the executive functions of planning, organisation and critical thinking
 - Encourage attitudes of selfishness and lack of concern for others
 - Bad role modelling for children in regards to all of the above
 - Discourage family mealtime interaction and preparing and eating food together. Research shows that children who eat freshly prepared home cooked meals are more healthy than those that don't. Research shows that family interaction at mealtimes has a positive effect on the intelligence quotient of children:
<https://childhooddevelopmentinfo.com>
- There has been talk of drone deliveries being helpful for people with disabilities/illness etc. I believe the following:
 - Sick people benefit from positive human contact, it is an intrinsic part of the healing process
 - For people with disabilities, drones are an unreliable system as they are unable to operate in many circumstances, as listed above. And again, there is nothing like positive human contact to lift the spirit and promote health and wellbeing.
 - There are concerns that people who rely on drone delivery will not undergo appropriate medical checks/discussion with chemists, instead relying on a menu from a drone app.
 - As already mentioned, there are concerns of medications being wrongly delivered/falling into the wrong hands, such as children, which is dangerous.

HUMAN RIGHTS ISSUES

- **Section 12 of the A.C.T. HUMAN RIGHTS ACT SAYS THAT:**
 - a) Not have his or her privacy, family, home or correspondence interfered with unlawfully or arbitrarily;**
- **Under international law, the right to privacy has been defined as:**
 - 1. "the right to be left alone"**
 - 2. "the right to live free from interference"
(and so includes the right to autonomy).**
- **The term "arbitrary interference" in the right to privacy can extend to lawful interference. Arbitrary interference in someone's private or family life is interference that may be lawful, but is unreasonable, unnecessary and the degree of interference is not proportionate to the need.**

- **Some definitions of “arbitrary” :**
 1. **“unrestrained and autocratic in the use of authority”**
 2. **“anti-democratic” / “high handed”**
 3. **“uncontrolled”**
 4. **“unrestrained”**
- **THE PROJECT WING BONYTHON DRONE TRIAL IMPOSED UPON BONYTHON RESIDENTS BY THE ACT GOVERNMENT IS CLEARLY A BREACH OF THE ABOVEMENTIONED HUMAN RIGHTS, AS IT ARBITRARILY INTERFERES WITH:**
 1. **OUR PRIVACY, FAMILY, HOME**
 2. **OUR RIGHT TO BE LEFT ALONE**

AND IT SUBJECTS US TO:

1. **SURVEILLANCE OF PERSONS FOR ANY PURPOSE**
 2. **COLLECTION, STORAGE, USE OR PUBLICATION OF PERSONAL INFORMATION AND HOW THAT INFORMATION IS ACCESSED, USED OR DISCLOSED.**
 3. **ALLOWS PUBLICATION OF PERSONAL INFORMATION (FOR ALL WE KNOW)**
 4. **HANDLING OF PERSONAL INFORMATION FOR RESEARCH OR STATISTICS**
- **THE PROJECT WING BONYTHON DRONE TRIAL IS A CLEAR BREACH OF THE BASIC HUMAN RIGHTS OF BONYTHON RESIDENTS, AS LEGISLATED IN SECTION 12 OF THE A.C.T. HUMAN RIGHTS ACT BY THE A.C.T. GOVERNMENT.**
 - **THE A.C.T. GOVERNMENT HAS BEHAVED IN AN UNRESTRAINED, AUTOCRATIC, HIGH-HANDED, AND ANTI-DEMOCRATIC MANNER IN SO DOING.**

SUMMARY/CONCLUSION

The ACT Government and Project Wing can put whatever spin they like on its drone operations in the ACT.

The fact remains that the people who have been subjected to these drone “trials” have rejected them. The people of Royalla rejected the drones. The people of Bonython have rejected the drones (80%). The people of Gungahlin will decide for themselves about the drones.

The fact is that CASA has given Project Wing an Exemption to fly within 5m height and 2m horizontal distance from a person. No other government in the world allows this. That is why the people of Bonython feel unsafe, violated and angry. They were not asked how they felt about this. The fact is no-one is responsible for regulation/compliance enforcement of the excessive noise of the drones. The drone noise has been measured at 80 decibels during a neighbourhood delivery on a weekend. EPA regulations disallow weekend residential noise over 45 decibels.

There is documented evidence of regulatory loopholes and lack of proper government oversight and due diligence in regards to the Project Wing Bonython drone “trial”.

We live in a democracy: "government in which the supreme power is vested in the people and exercised by them directly...."

That is why there is now this ACT Legislative Assembly Inquiry into Drone Delivery Systems in the ACT.
BECAUSE THE PEOPLE HAVE SPOKEN.

THE FOLLOWING IS QUOTED DIRECTLY FROM A LETTER (ATTACHED) SENT TO THE ACTING CEO OF CASA, MR GRAEME CRAWFORD, BY THE BONYTHON AGAINST DRONES ACTION GROUP (BAD) ON 15 JANUARY 2019. BAD DID NOT RECEIVE A RESPONSE TO THIS LETTER FROM MR CRAWFORD:

"We note your non-response to our concerns that no agency has been made responsible for noise regulation/compliance and privacy issues in relation to Project Wing drone operations in Bonython, and that we were not asked for our permission. This "trial" is a gross invasion of our peace, privacy and basic human rights (See United Nations Human Rights Declaration, Article 12 – "No one shall be subjected to arbitrary interference with his privacy, family, home.....". It has jeopardised our health and wellbeing and created conflict in our neighbourhood. The issues will not disappear just because no-one addresses them, they will only be magnified as time goes by.

We observe a recurrent pattern that permeates all aspects of the Project Wing Bonython drone "trial". This pattern involves a complacent, laissez faire attitude, a lack of proper governance and due diligence, accountability, responsibility and reasonable concern for the welfare of Bonython residents by all players.

Regarding the Barr ACT Government, we know Minister Gentleman invited Project Wing to the ACT to conduct the Bonython drone "trial". From a meeting with Minister Gentleman, it is apparent that his knowledge of important details of the "trial" is extremely limited, as is his concern for his own constituents, the residents of Bonython, in his electorate of Brindabella.

The ACT Barr Government has allowed such a "trial" to operate within people's personal space - the sanctity of their homes - without appointing any agency to be responsible for the extremely serious noise and privacy issues. Indeed they have made it abundantly clear that they are NOT responsible for noise or privacy, as has your own organisation CASA. They have also not made appropriate avenues of complaint available.

A grave concern exists amongst the majority of Bonython residents that their concerns about the serious issues which have arisen during this "trial" were trivialised and mocked by the ACT Government in various media. This is further evidenced by the fact that the ACT Labor Party did not support the setting up of an Inquiry into Project Wing drone operations in the ACT. It is also known that Project Wing actively lobbied the ACT Government to NOT hold this Inquiry.

Concerning Project Wing, we have found them to be untruthful in their reporting and in much of their PR. This is particularly concerning to us, as the ACT Government allows them to be self-reporting in relation to the Bonython "trial". We also find it gravely concerning that Project Wing is known to have offered large amounts of money to various community bodies throughout the ACT in order to garner their support. Also of grave concern to us is that Project Wing reports in various media that it is setting up a "permanent" base in Mitchell from which to conduct further drone operations. In light of the ACT Parliamentary Inquiry now underway into Project Wing's drone operations in the ACT, and in light of the fact that their future operations are still subject to approval, as the Bonython "trial" has not yet finished, we find this highly presumptuous and complacent on the part of Project Wing, and we do wonder why they are so complacent.

In regards to CASA, we find that you have engaged with us in a manner that glosses over many of our legitimate concerns about serious matters. You have either not fully answered some of our questions, or ignored them. Of gravest concern to us is that you appear uninterested in ensuring that the wording of a legal Instrument is accurate and unequivocal."

Thank you for considering my submission .



ROBYN MCINTYRE

17 February 2019

ATTACHMENTS:

- 1. Diagram Depicting Visual Comparison of Difference between Project Wing drone operations with Exemption issued by CASA (drones may not be within 5m high/2 m either side of a person) to Standard Drone Rules for All Other Drone Operators in Australia. (not within 30m of a person).**
- 2. Table 1: Key Challenges of UAV'S and their Mitigation**
- 3. Correspondence chain between BAD and CASA (5 letters)**
- 4. Letters to the Editor of the Canberra Times written by me that were published in The Canberra Times over the course of the Project Wing Bonython drone trial**
- 5. NB: Video footage of Project Wing drone operations will be sent under separate cover**



DEPICTING
CASA EXEMPTION FOR
PROJECT WING
DRONE OPERATIONS

TO RECYCLATIONS
COMPARED TO
STANDARD RECYCLATION FOR ALL
OTHER DRONE OPERATORS
IN AUSTRALIA.

Table 1: Key Challenges of UAVs and their Mitigation

Issues	Major Challenges	Possible Solutions
Privacy	Detection/Access to justice	Hardware and software for device detection, and data retention / Registry of owners and devices
Ownership	Accountability	Registry of owners and devices/ Assign liability for UAV owners/
Security	Control/Enforcement	Creation of new infrastructure and development of proper assets: UAV trackers devices/automatic safe landing / Establishment of insurance entities etc.
Regulatory	Lack of comprehensive rules and uniformity across jurisdictions	Redefinition of "reasonable expectation of privacy"/ Definition of physical aerial boundaries / Centralization of Powers
Business Models	Lack of clear guidelines to operate in compliance with the law	Promote regulations for the development UAV-related technologies

Nev and Andrea Sheather
On behalf of
The Bonython Against Drones
Action Group

[REDACTED]
[REDACTED]

10 December 2018

Mr Shane Carmody
Director of Aviation Safety
Civil Aviation Safety Authority
GPO Box 2005
CANBERRA ACT 2601

Dear Sir,

OPERATION OF DRONES OVER BONYTHON

We refer to documents recently released by CASA under the Freedom of information (FOI) Act in relation to a drone delivery trial currently being conducted in Bonython, A.C.T., by the US-based company, Project Wing. We request answers to the following questions:

Q1. We note that CASA has published an Instrument of Exemption CASA EX 82/18 dated 29 June 2018 against CASR Part 101 provisions (with yourself as the signatory), and understand this is a legally-binding document containing specific conditions which must be adhered to – by law. We note that Section 7 of the Instrument, sub-sub-paragraph (1) (d) (iv) states that the “relevant aircraft” (i.e. the drone) must not operate “less than 5 m overhead a person, or 2 m horizontal distance from a person”. This then means the drone cannot pass within 2m laterally of a person on the ground, no matter what height it is operating at above 5m AGL.

– Our question then is – what mechanism is in place to ensure that the drone, which transits over many private property front and back yards between departure from the launching base to delivery point, and then from the delivery point back to the recovery base, does not pass directly over persons in those yards? To fly directly over those people would breach the 2m lateral buffer distance specifically called up by the Exemption reference.

Q2. We note that Section 7 sub-para (c) of the Exemption does not preclude the drone from operating within 15m of a sealed road. (Whereas it must be outside this 15m distance for launching and recovery – the mitigation of risk of distraction to motorists is cited in this respect). So if the drone can deliver goods to the front yard of a client’s property, which would (for Bonython’s case) be on a sealed road, how is the mitigation of risk to passing motorists as referred to above effected? It seems to us it cannot be. Secondly, what are the

2.

protection measures that must be in place to ensure the drone does not pass within 2m lateral distance of persons walking in front of such front yards, or walking down drives etc, whilst the drone is making its final approach over the relevant area to deliver goods?

Q3. What if a child runs to a delivery package at the moment of delivery? What are the safety measures in place to protect the child?

Q4. The drone in question is defined as an aircraft in CASA legislation. It is an aircraft that operates over persons on the ground, has an appreciable mass, and can transit over populous areas at well above 100 km/hr. Given all this, we believe the aircraft must have been designed to a given airworthiness design standard, and then certificated to such standard. What is the design standard for the aircraft in question, and which authority carried out, or would be carrying out, the relevant airworthiness certification (e.g. FAA, CASA)?

Q5. Can CASA please provide details in relation to the incident in Bonython where an Unmanned Systems Australia (USA) drone made a controlled descent and landing onto a residential property in Bonython? And specifically, can CASA please provide details such as dates and times in the written notification by USA to CASA in respect of retrieving the vehicle in compliance with the regulations, and CASA's response providing authorisation to retrieve the drone?

Q6. In respect to the above question, can CASA please advise if there was an investigation conducted in respect of the incident, and reporting made available to other authorities such as ATSB?

Q7. What is CASA's definition of an incident? "Controlled landings" of these drones are deviations from planned flight and as such should they not be defined as an incident? As such, should there not be a requirement for Project Wing to report all details of "controlled landings"?

We would be grateful if you could reply as a matter of urgency, as we believe the Project Wing drone delivery trial in Bonython is being conducted outside the boundaries of law.

Yours faithfully,



NEV AND ANDREA SHEATHER





Australian Government
Civil Aviation Safety Authority

OFFICE OF THE CHIEF EXECUTIVE OFFICER

CASA Ref: GI18/1008

04 January 2019

Mr Nev and Mrs Andrea Sheather
 The Bonython Against Drones Action Group
 50 Derrington Crescent
 BONYTHON ACT 2905

Email: nevsheather@gmail.com

Dear Mr and Mrs Sheather

Operation of Drones over Bonython

I refer to your letter of 10 December 2018 regarding remotely piloted aircraft (RPA) operations over Bonython and provide the following answers to the questions raised in your letter:

Q1. What mechanism is in place to ensure that the drone, which transits over many private property front and back yards between departure from the launching base to delivery point, and then from the delivery point back to the recovery base, does not pass directly over persons in those yards?

CASA's instrument EX 82/18, which applies to the operation of the RPA used by Wing, provides that the RPA must not operate less than 5 metres overhead a person, or 2 metres horizontal distance from a person. The 2 metres horizontal distance is *adjacent* to the person, not at any distance *above* that point.

Q2. If the drone can deliver goods to the front yard of a client's property, which would (for Bonython's case) be on a sealed road, how is the mitigation of risk to passing motorists effected? Secondly, what are the protection measures that must be in place to ensure the drone does not pass within 2m lateral distance of persons walking in front of such front yards, or walking down drives etc, whilst the drone is making its final approach over the relevant area to deliver goods?

CASA has taken reasonable steps to ensure that during the RPA launch and recovery, the operation must not pose an unreasonable level of distraction to motorists. CASA notes that motorists in a suburban street where delivery by drone may take place would be operating at 50 kilometres per hour. The delivery sequence is short, whereas launch and recovery is of longer duration.

Q3. What if a child runs to a delivery package at the moment of delivery? What are the safety measures in place to protect the child?

During the delivery, the drone hovers above 5 metres from ground level. The reason for this is to maintain a safe distance in case a person inadvertently walks near the drone during the delivery sequence. If a person were to tug at the package, the drone has sensors on board and would automatically release the line to the package. Should you wish to know more about this process, please contact Wing. CASA is satisfied safety considerations have been addressed but is unable to provide detailed information as such information may be considered commercially sensitive.

Q4. What is the design standard for the aircraft in question, and which authority carried out, or would be carrying out, the relevant airworthiness certification (e.g. FAA, CASA)?

The drone used by Wing is not required to be certified to the same certification standards as a conventionally piloted aircraft. The Civil Aviation Safety Regulations only require a large RPA to have an airworthiness certification and the RPA in this case does not fall in this category. CASA policy is to utilise the Specific Operations Risk Assessment framework produced by the Joint Authorities for Rulemaking on Unmanned Systems (an international expert group of which CASA is a member), to assess risk associated with an RPA operation. The framework includes elements for system reliability, redundancy and impact testing.

Q5. Can CASA please provide details in relation to the incident in Bonython where an Unmanned Systems Australia (USA) drone made a controlled descent and landing onto a residential property in Bonython? And specifically, can CASA please provide details such as dates and times in the written notification by USA to CASA in respect of retrieving the vehicle in compliance with the regulations, and CASA's response providing authorisation to retrieve the drone?

In regard to the controlled landing of a drone in August 2018 on green space in Bonython, I can advise that CASA does not release detailed information about incidents unless there is a lawful requirement to do so. I can confirm, however, that Wing's reporting of the controlled landing was in accordance with established procedures which align with the reporting requirements of the Australian Transport Safety Bureau.

Q6. In respect to the above question, can CASA please advise if there was an investigation conducted in respect of the incident, and reporting made available to other authorities such as ATSB?

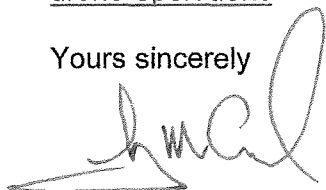
See response to Q5. CASA reviewed the information relating to the controlled landing and was satisfied that Wing complied with the conditions of their CASA-issued permission.

Q7. What is CASA's definition of an incident? "Controlled landings" of these drones are deviations from planned flight and as such should they not be defined as an incident? As such, should there not be a requirement for Project Wing to report all details of "controlled landings"?

The International Civil Aviation Organization (Annex 13) definition of **incident** is 'an occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation'. CASA is satisfied with the present reporting required by Wing.

I can confirm that CASA has no reason to believe that Wing are conducting operations unlawfully. Should you become aware of any safety related matter, I encourage you to report it through CASA's online drone complaint form available at: <https://www.casa.gov.au/webform/report-unsafe-drone-operations>

Yours sincerely



Graeme M Crawford
Acting Chief Executive Officer and
Director of Aviation Safety

Bonython Against Drones Action Group
C/O A& N Sheather
6 January 2018

Dear Mr Crawford,

OPERATION OF DRONES OVER BONYTHON

Thank you for your letter GI18/1008 of 04 January 2019, in which you respond to questions raised by us in our letter of 10 December 2018 concerning the operation of drones over Bonython by Project Wing.

Q1. The Bonython Against Drones Action Group key representatives have a problem with the response to this question, as follows:

- CASA Instrument Number CASA EX 82/18 Section 7, Subsection (1) (d) (iv) states that “the relevant aircraft is not operated.... less than 5 metres overhead a person, or 2 metres horizontal distance from a person”. (Our underlining). You have explained to us that the horizontal distance is adjacent to the person, not at any distance above that point.
- But the Exemption wording does not clearly make this point – it does not use the word “adjacent”, and nothing prevents a reader from assuming that a cylinder of clearance of 4 metres diameter around a person on the ground extends upwards with no limit.

To this end we believe the wording in Question 1 must be amended to make the requirement absolutely clear.

Therefore we maintain that the operation of drones over Bonython by Project Wing to date has been unlawful and any further drone operations by Project Wing will be unlawful until the correct wording is used in CASA Instrument Number CASA EX82/18 Section 7, Subsection (1) (d) (iv).

Q2. We have a problem with the response to this question as follows:

- Our question was in regard to mitigation of risk to passing motorists during drone delivery operations to people’s front yards. Your response says only that “CASA notes that motorists.....would be operating at 50 kilometres per hour”.

2.

- We are aware of an incident where a low flying Project Wing drone was blown on to/near a motorist who was driving on a busy public road. The motorist reported to us that this nearly caused them to have an accident.

We therefore ask you again, how is the mitigation of ALL risks to passing motorists effected?

Q3. In regards to your response to this question, we are pleased to note that CASA is satisfied that safety considerations have been addressed in this regard. We also note that you are unable to provide detailed information due to “commercial sensitivity”. We would make the following point:

- Our question was specifically in regards to a child – “what are the safety measures in place to protect the child?” Your answer referred to a “person”. As we, the residents of Bonython, are the only people in the ACT (and the world we are told by Project Wing) to be subjected to these drone operations in close proximity to us (without our permission), our concerns are for our children, not the commercial viability of Project Wing.

Q4. We note your response to this question. We would make the following points:

- Does the Specific Operations Risk Assessment framework produced by the Joint Authorities for Rulemaking on Unmanned Systems, upon which CASA predicates its policy, relate to Project Wing’s drone delivery operation in Bonython, which allows it to operate in very close proximity to a person via an Exemption to CASR Part 101 provisions (we reiterate we are told it is a “world first”)?
- As the people who are the subjects of this world-first experiment, we believe additional safety and certification standards should be applied to it. We believe the Project Wing drones should be subjected to Airworthiness Certification, and we would feel safer for it.

Q5. We note your response to this question. We would make the following point:

- We are aware of discrepancies in Project Wing’s reporting of incidents. The Wall Street Journal (26/12/2018) recently interviewed and reported details from a Bonython resident where a delivery was incorrectly dropped on their driveway (extract below).

3.

- https://www.wsj.com/articles/delivery-drones-cheer-shoppers-annoy-neighbors-scare-dogs-11545843552?shareToken=st421d32742da94d7fae59961b9bd3ea18&ref=article_email_share&fbclid=IwAR3ApgtS2Aj8XKFy6h0Wm1eyZoF7syllDWhkoegvYa1rKuvfff-2wdOUNO4

Laura Edwards, 32, hasn't used the drone service, but she returned home after a weekend away to find two hot chocolates in front of her house, still in the aerodynamically shaped box that Wing uses for delivery. One had mostly leaked out, requiring her husband to hose down the driveway.

"I just felt angry, because I thought, 'Really? We have to clean this up,' " said Ms. Edwards, who posted about the incident on social media but didn't file a formal complaint. An investigation by Wing later determined the hot chocolates had been left at the wrong house because a customer selected the incorrect address.

Q6. We note your response to this question.

Q7. We note your response to this question.

We understand the burden and recent negative media about drones (Gatwick airport, Canberra New Years Eve, Tasmanian bush fires, etc) that impacted your agency. Until the regulations are updated and CASA is adequately resourced to undertake compliance activities, we would like to propose that you cease the Bonython drone trial and any further drone trials in the ACT.

We would like to take this opportunity to state that we feel it is morally (and perhaps legally) wrong that we were not asked for our permission to be the subjects of this so-called trial, and also that no one has been made responsible for noise regulation/compliance and privacy issues.

We look forward to your response to our further concerns, as stated above.

Yours sincerely,



Andrea and Nev Sheather

On behalf of the Bonython Against Drones Action Group.

The Standing Committee on Economic Development and Tourism resolves to inquire into and report on drone delivery systems in the ACT, with particular reference to:

- 1) The decision to base the trials of the technology in the ACT and surrounding region
- 2) The economic benefit of drone delivery technology being tested in the ACT including;
 - a. The investment that has been brought in to the Territory
 - b. The number of jobs that have been created as part of the trial
 - c. The extent of collaboration with local industry and academic institutions
- 3) The extent of regulatory oversight of drone technology at various levels of government including;
 - a. Local authorities such as EPA, Worksafe, Access Canberra
 - b. Commonwealth agencies such as Air Services Australia, Civil Aviation Safety Authority
- 4) The extent of any environmental impact as a result of trialling drone delivery technology on;
 - a. Residents with in the trial area
 - b. Native wildlife
 - c. Domestic animals
- 5) Ways to improve the use of drone delivery technology within the ACT
- 6) Any other relevant matter



Australian Government
Civil Aviation Safety Authority

OFFICE OF THE CHIEF EXECUTIVE OFFICER

CASA Ref: GI18/1008-1

11 January 2019

Mr Nev and Mrs Andrea Sheather
 The Bonython Against Drones Action Group
 50 Derrington Crescent
 BONYTHON ACT 2905

Email: nevsheather@gmail.com

Dear Mr and Mrs Sheather

Operation of Drones over Bonython

I refer to your further correspondence of 6 January 2019 regarding remotely piloted aircraft (RPA) operations over Bonython and provide the following answers to the questions raised in your letter:

Q.1 The Bonython Against Drones Action Group maintains that the operation of drones over Bonython by Project Wing to date has been unlawful and any further drone operations by Project Wing will be unlawful until the correct wording is used in CASA Instrument Number CASA EX82/18 Section 7, Subsection (1) (d) (iv).

CASA EX82/18 provides an exemption against the requirement in regulation 101.030 of the *Civil Aviation Safety Regulations 1998* (CASR) to operate not closer than 30 metres to a person, with a limitation in the exemption that the relevant aircraft is not operated less than 5 metres overhead a person, or 2 metres horizontal distance from a person (paragraph 7(1)(d)).

The reference to "less than 5 metres overhead a person" and "2 metres horizontal distance" creates a 'zone' or a 'bubble' around a person that the RPA cannot breach. CASA considers the terms of the exemption are adequate.

Q2. how is the mitigation of ALL risks to passing motorists effected?

The conditions and limitations in the exemption also serve as mitigations against distraction to drivers. If members of the public wish to report any aviation safety concerns with Wing's operations, they can do so by completing the online form on the CASA website available at the following link: <https://www.casa.gov.au/webform/report-unsafe-drone-operations>.

CASA reviews all referrals on a case by case basis to determine if a safety concern exists.

Q3. Our question was specifically in regards to a child – "what are the safety measures in place to protect the child?" Your answer referred to a "person". As we, the residents of Bonython, are the only people in the ACT (and the world we are told by Project Wing) to be subjected to these drone operations in close proximity to us (without our permission), our concerns are for our children, not the commercial viability of Project Wing.

The reference to a 'person' in the reply includes a child.

Q4. Does the Specific Operations Risk Assessment framework produced by the Joint Authorities for Rulemaking on Unmanned Systems, upon which CASA predicates its policy, relate to Project Wing's drone delivery operation in Bonython, which allows it to operate in very close proximity to a person via an Exemption to CASR Part 101 provisions (we reiterate we are told it is a "world first")?

As the people who are the subjects of this world-first experiment, we believe additional safety and certification standards should be applied to it. We believe the Project Wing drones should be subjected to Airworthiness Certification, and we would feel safer for it.

The Specific Operations Risk Assessment is a risk assessment methodology used to establish a sufficient level of confidence that a specific operation can be conducted safely. It allows the evaluation of the intended concept of operation and a categorisation into six different Specific Assurance and Integrity Levels. The model considers the nature of all threats for specified hazards, and the relevant design and operational mitigations, and evaluates them systematically to determine the boundaries for a safe operation. This is an international standard methodology developed by a group of subject matter experts from several National Aviation Authorities.

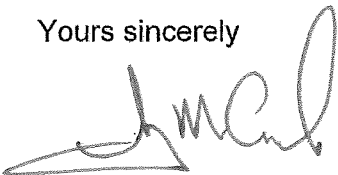
This methodology may be applied where the traditional approach to aircraft certification (approving the design, issuing an airworthiness approval and type certificate) may not be appropriate. This method may also be used to support activities necessary to determine airworthiness requirements and to show compliance with safety objectives in the certified category. CASA notes the groups preference for Airworthiness Certification of the RPA in use by Wing.

Q5. We are aware of discrepancies in Project Wing's reporting of incidents. The Wall Street Journal (26/12/2018) recently interviewed and reported details from a Bonython resident where a delivery was incorrectly dropped on their driveway (extract below).

The article appears to highlight problems with the delivery of products rather than being an aviation safety matter related to Wing's operations.

CASA is currently satisfied with the aviation safety aspects of Wing's operations.

Yours sincerely



Graeme M Crawford
Acting Chief Executive Officer and
Director of Aviation Safety

Bonython Against Drones Action Group
C/O A. and N. Sheather

15 January 2019

Mr. G. Crawford
Acting Chief Executive Officer and
Director of Aviation Safety
CASA
GPO Box 2005
CANBERRA ACT 2601

Dear Mr. Crawford,

OPERATION OF DRONES OVER BONYTHON

We refer to your letter of 11 January 2019, G118/1008-1, in response to our letter to you of 6 January 2019 on the above subject. We advise we have received advice from various technical experts, some with over 10 years' experience in writing CASA regulations and instruments, in relation to these issues. It is upon this advice that we have acted.

Q1. After studying your response to Q1 in our letter to you of 6/1/19 (and specifically the second paragraph of your response commencing: "The reference to less than...") and the specific geometry involved, we believe there is still a problem in describing the zone around a person that the RPA cannot breach.

The current wording of the Exemption does not accurately describe the zone involved. And it is certainly not a "bubble". The latter by its very definition has a round perimeter, and this cannot be the case. And the word "adjacent" does not help an accurate description in any way.

At ground level, the 2 metres horizontal distance from a person describes a circle of 4 metres diameter around that person. If this is extended upwards to the 5 metres lower limit, then it is a cylinder, rather than any other shape. This total exclusion zone needs to be accurately described in the Exemption.

This could be accomplished by amending Section 7 Subsection (1) (d) (iv) to read:

2.

“(iv) less than 5 metres overhead a person, or 2 metres horizontal distance from a person, thus providing a total exclusion zone cylinder around that person with a diameter of 4 metres up to a height of 5 metres”.

Otherwise it is possible for an assumption to be made that the aircraft cannot fly over a person on the ground at any height.

We believe it is important that the wording used in this CASA Instrument No. CASA EX82/18 Section 7 Subsection (1) (d) (iv) Exemption to CASR Part 101 is accurate and unequivocal, as is the case in regard to any and all legal instruments. We further believe that there are potential legal ramifications if the wording is equivocal, hence our previous references to the Project Wing Bonython drone “trial” being unlawful.

As the eyes of the aviation/drone world are scrutinising us, having been told by Project Wing/the ACT Government that the Project Wing Bonython drone “trial” is a “world-first”, we would have thought that you would not be happy to be using wording in this legally-binding Exemption that is equivocal.

Q2. We don’t believe your answer adequately addresses/resolves this question regarding the near-accident of a motorist because of a Project Wing drone.

Q3. We don’t believe your regulations are specific enough to protect different types of people, eg, a child needs extra protection from drones, for obvious reasons.

Q4. Again, we are told that the Project Wing Bonython drone “trial” is a “world-first”, and we, the Bonython residents, are the subjects of that trial”. There has not been a trial to gather safety data (as required by the FAA), before the unleashing of Project Wing’s drones on us for their commercial operations. Therefore we are of the view that there has been no risk-assessment of the Project Wing Bonython drone “trial”. We, the Bonython residents, **ARE** the risk assessment. We are extremely disturbed by this and are not at all reassured by your answer to this question.

Q5. We reiterate that we are aware of discrepancies in Project Wing’s reporting of incidents (and of statistics).

We note your non-response to our concerns that no agency has been made responsible for noise regulation/compliance and privacy issues in relation to Project Wing drone operations in Bonython, and that we were not asked for our permission. This “trial” is a gross invasion of our peace, privacy and basic human rights (See United Nations Human Rights Declaration, Article 12 – “No one shall be subjected to arbitrary interference with his privacy, family, home.....”). It has jeopardised our

health and wellbeing and created conflict in our neighbourhood. The issues will not disappear just because no-one addresses them, they will only be magnified as time goes by.

We observe a recurrent pattern that permeates all aspects of the Project Wing Bonython drone "trial". This pattern involves a complacent, laissez fair attitude, a lack of proper governance and due diligence, accountability, responsibility and reasonable concern for the welfare of Bonython residents by all players.

Regarding the Barr ACT Government, we know Minister Gentleman invited Project Wing to the ACT to conduct the Bonython drone "trial". From a meeting with Minister Gentleman, it is apparent that his knowledge of important details of the "trial" is extremely limited, as is his concern for his own constituents, the residents of Bonython, in his electorate of Brindabella.

The ACT Barr Government has allowed such a "trial" to operate within people's personal space - the sanctity of their homes - without appointing any agency to be responsible for the extremely serious noise and privacy issues. Indeed they have made it abundantly clear that they are NOT responsible for noise or privacy, as has your own organisation CASA. They have also not made appropriate avenues of complaint available.

A grave concern exists amongst the majority of Bonython residents that their concerns about the serious issues which have arisen during this "trial" were trivialised and mocked by the ACT Government in various media. This is further evidenced by the fact that the ACT Labor Party did not support the setting up of an Inquiry into Project Wing drone operations in the ACT. It is also known that Project Wing actively lobbied the ACT Government to NOT hold this Inquiry.

Concerning Project Wing, we have found them to be untruthful in their reporting and in much of their PR. This is particularly concerning to us, as the ACT Government allows them to be self-reporting in relation to the Bonython "trial". We also find it gravely concerning that Project Wing is known to have offered large amounts of money to various community bodies throughout the ACT in order to garner their support. Also of grave concern to us is that Project Wing reports in various media that it is setting up a "permanent" base in Mitchell from which to conduct further drone operations. In light of the ACT Parliamentary Inquiry now underway into Project Wing's drone operations in the ACT, and in light of the fact that their future operations are still subject to approval, as the Bonython "trial" has not yet finished, we find this highly presumptuous and complacent on the part of Project Wing, and we do wonder why they are so complacent.

4.

In regards to CASA, we find that you have engaged with us in a manner that glosses over many of our legitimate concerns about serious matters. You have either not fully answered some of our questions, or ignored them. Of gravest concern to us is that you appear uninterested in ensuring that the wording of a legal Instrument is accurate and unequivocal.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Signed/endorsed'.

Andrea and Nev Sheather
On behalf of the Bonython Against
Drones Action Group

Cc Hon Michael McCormack MP
Hon Anthony Albanese MP
Gai Brodtmann MP
Andrew Barr, ACT Chief Minister
MLA Mick Gentleman
MLA Andrew Wall
MLA Joy Burch
MLA Nicole Lowder
MLA Mark Parton
MLA Shane Rattenbury
Tim Hollo, Green Institute
Environment, Planning and Sustainable Development Directorate, ACT Govt.
Air Services Australia
Environment Protection Authority
Parks and Conservation
Tahlia Roy, ABC
Dan Bouchier, ABC Radio
Dan Jervis-Bardy, Fairfax Media
Mike Cherney, Wall Street Journal

Robyn McIntyre [REDACTED]

Sat, Oct 20, 2018 at 6:13 PM

To: letters.editor@canberratimes.com.au

Bcc: [REDACTED]

ATTACHMENT 4

Project Wing is a US company affiliated with Google conducting a drone delivery trial to homes in Bonython. We are greatly disturbed that a drone trial that is so outrageously loud and invasive of our peace, privacy, wellbeing and basic human rights has been allowed - indeed invited and promoted by Mick Gentleman - without any proper community consultation. We view it as an insult to our intelligence and consider it to be the height of rudeness, arrogance and ignorance on his and the ACT Government's part.

We are deeply disturbed that our safety has been put at risk, our beautiful birdlife has been so frightened it has flown away and that some people's serious medical conditions have been exacerbated/compromised by this ill-considered, self-serving drone trial.

We are also deeply disturbed that there is no Government agency responsible for regulating the noise of these drones.

ROBYN MCINTYRE
[REDACTED]

PUBLISHED.

PROJECT WING BONYTHON DRONE TRIAL

4 messages

ATTACHMENT 4

Robyn McIntyre [REDACTED] >

Sat, Nov 10, 2018 at 1:41 PM

To: letters.editor@canberratimes.com.au

Bcc: Robyn McIntyre [REDACTED]

It is excellent that ACT Liberal MLA Andrew Wall has set up an Inquiry into the Project Wing Bonython Drone Trial, and the future of similar services in the ACT, to be conducted by the ACT Legislative Assembly's Standing Committee on Economic Development and Tourism.

In talking to hundreds of Bonython residents recently, whilst collecting Petition signatures against this Trial to go to the ACT Legislative Assembly, it was revealed that a Bonython resident who suffers from PTSD who had been able to stop taking medication had to go back on it because of the drone noise, a WWII veteran has anxiety attacks because the whining, screeching drone noise reminds him of the wartime bombs and a woman who suffers severe migraines lives in fear of having a migraine whilst being subjected to the drone noise, as she says the pain would be unbearable for her.

For all the discussion/hype/spin generated by the Project Wing Bonython Drone Trial, these Bonython residents are really the only people qualified to comment on it, as they are the only ones who have endured the drones, and their accompanying outrageous noise, flying over, next to and around their homes for several months, having a serious impact on them and their families. No amount of convenience, accessibility and revolutionary technology can compensate people for the deliberate and uncaring violation of their basic human rights, privacy, safety and wellbeing by Project Wing and the ACT Barr Government. These Bonython residents are very angry and upset about this and the fact they were not consulted by either Project Wing or the ACT Barr Government first.

The fact is that about 80 per cent of these hundreds of Bonython residents are against the use of commercial drones in residential areas, and about 20 per cent are for it.

Proper regulation, proper community consultation and due diligence need to be in place before any such trial begins, and this was not done. The outrageous drone noise is not even being regulated. The cart has been put before the horse. I hope the abovementioned Inquiry is able to restore the lost humanity of the ACT Barr Government, and all players involved in this drone trial, and that any future potential government is mindful of this.

ROBYN MCINTYRE
BONYTHON RESIDENT

DECIBELS OF A DRONE

1 message

Robyn McIntyre [REDACTED]
To: letters.editor@canberratimes.com.au

Tue, Nov 13, 2018 at 11:21 AM

Editor
Canberra Times

The Project Wing drone noise has been measured at 80 decibels from a fence boundary during a delivery. The EPA decibel limit for residential areas on weekends is 35 decibels. This directly refutes Chief Minister Barr's recent statement on ABC television that the noise of a drone is similar to the noise of a lawnmower.

The fact is that of the hundreds of Bonython residents who were canvassed about the noise and the many other problems associated with Project Wing's drone use in the suburb, 80 percent do not want commercial drone deliveries in residential areas.

ROBYN MCINTYRE
BONYTHON RESIDENT

PUBLISHED

MISINFORMATION

16 messages

Robyn McIntyre [REDACTED]
To: letters.editor@canberratimes.com.au

Thu, Nov 15, 2018 at 10:45 PM

Dear Editor

Project Wings' CEO James Ryan Burgess, heard in a soundclip during an interview of Gai Brodtmann by Dan Bouchier on ABC breakfast radio recently, seemed misinformed.

It is incorrect of him to say the objections to the trial in Bonython are by a small group of residents. The fact is that in canvassing hundreds of Bonython residents about Project Wing's drone trial in their suburb, 80 per cent were not in favour of commercial drone use in residential areas.

It is also incorrect of him to say the drone noise is bothersome to only a few residents and the decibels are like that of a car. The fact is the drone noise has been measured at 85 decibels from 35 metres. www.chem.purdue.edu tells us that 80 db is twice as loud as 70 db with possible hearing damage after 8 hour exposure. It also tells us a freight train at 15 metres is 80 db and a propeller plane flyover at 1000 ft is 88 db. Afterall, a drone IS an aircraft. And it tells us that a passenger car travelling at 65 mph at 25 ft is 77 db.

The fact is the noise of a drone is not pleasing and is very disruptive to the community and its wildlife. An example of this disruption is the WWII veteran who experiences anxiety attacks when he hears the drone noise because it reminds him of the screaming of the wartime bombs.

It is time for James Ryan Burgess to listen properly to and care about the people. Afterall who wants food and coffee delivered by drone at the expense of their vulnerable neighbours.

ROBYN MCINTYRE
BONYTHON RESIDENT

PUBLISHED

Dear Editor

Christmas is a time for peace, gratitude, reflection and goodwill.

The peace in Bonython, due to the Project Wing drones not having operated for a few days, is palpable. It is a tonic for the spirit. We are truly grateful for it.

We hope the Barr ACT Government reflects on its willingness to cause such grief to its Bonython constituents over the past several months. Neighbours who are friends have been yelling at each other because of conflict over the drones, or are now not talking to each other. People (remember this includes vulnerable people, unwell people, elderly people, children and babies) have been getting woken up from sleep in their bedrooms. Our beautiful birds and other wildlife have been frightened away and we miss them.

We are reflecting on the fact that documents obtained under FOI ("Risk Management - The use of delivery drones in the ACT - Project Wing", conducted by the the ACT Insurance Authority) reveal that the Barr Government identified all the potential serious negative impacts of the Project Wing Bonython drone trial, but went ahead with it anyway. These impacts are now well documented and in the public arena and have led to the setting up of a government Inquiry - actively not supported by either the Barr Government or Project Wing by the way.

In fact, when these very serious issues arose as a result of the actual "trial", the Barr Government deflected and abrogated responsibility for addressing them, distanced itself from the "trial" and trivialised and even mocked the concerns of /serious impacts on the Bonython residents who have been the "subjects" of the "trial" against their will.

We are also reflecting on the fact that these documents reveal some regulatory anomalies in the Project Wing drone operations.

As for goodwill in relation to the Project Wing Bonython drone delivery trial, that will take some work.

ROBYN MCINTYRE

[REDACTED]

20/12/2018

DRONES BACK - PEACE NO MORE IN BONYTHON

1 message

Robyn McIntyre [REDACTED]

Tue, Jan 15, 2019 at 5:53 PM

To: letters.editor@canberratimes.com.au

Bcc: Robyn McIntyre [REDACTED] >

The Editor
The Canberra Times

Dear Sir,

The Project Wing drones are back in action in Bonython, shattering our peace and privacy with their hideous screaming noise, and scaring our beautiful birds away again. There were twenty flyovers of a backyard recorded last Saturday due to drone deliveries, and that was not the only day.

It is not only Bonython residents who are disturbed by this drone operation. There are many friends and family of Bonython residents who are concerned for their welfare.

One such person is a 96 year old NSW resident, who was a pilot in Bomber Command in WWII, and who has seen and done a lot of significant things in his lifetime. He watched the Channel 9 television programme "A Current Affair", aired on 3 January 2019 about Project Wing's Bonython drone delivery "trial", and says he was shocked to hear the outrageously loud drone noise and shocked that any government would allow such a thing to happen to its constituents.

He believes it is an exercise in government and commercial greed, demonstrating a lack of reasonable concern for the welfare of the human beings who have been subjected to it against their will. He, however, is concerned for our welfare. He is hoping an influential and humane entity will champion the cause to stop the proliferation of Project Wing drone deliveries in the ACT, as is the plan of the ACT Government and Project Wing at this time. And he, bless his heart, is one of many.

Another such person is concerned that a drone might be blown by wind onto powerlines and the potential for injury and death to people, and for the starting of bushfires. They are also concerned that the Project Wing drones are not certificated for airworthiness and whether or not they are insured. And they are concerned about the security of the cargo loaded on to these drones.

ROBYN MCINTYRE
[REDACTED]

PUBLISHED.

Editor
The Canberra Times

Dear Sir,

Reference CT 28 January, P2 "Government backs drone deliveries". This article talks about Project Wing's planned expansion of its drone operations, pending CASA approval, to Canberra's north. The ACT Government and Project Wing can put whatever spin they like on its drone operations in the ACT.

The fact remains that the people who have been subjected to these drone "trials" have rejected them. The fact is that no-one who hasn't been subjected to the drones is qualified to comment. The people of Royalla rejected the drones. The people of Bonython have rejected the drones (80%). The people of Gungahlin will decide for themselves about the drones.

The fact is that CASA has given Project Wing an Exemption to fly within 5 m height and 2 m horizontal distance from a person. No other government in the WORLD allows this. That is why the people of Bonython feel unsafe, violated and angry. They were not asked how they felt about this. The fact is no-one is responsible for regulation/compliance enforcement of the noise of the drones. Drone noise has been measured at 80 decibels during a neighbourhood delivery on a weekend. EPA regulations disallow weekend residential noise over 35 decibels.

There is documented evidence of regulatory loopholes and lack of proper government oversight and due diligence in regards to the Project Wing Bonython drone "trial".

The enabling of Project Wing suburban drone delivery operations in the ACT smacks of big money, big business and governments running roughshod over the people. Sound familiar?

We live in a democracy: "government in which the supreme power is vested in the people and exercised by them directly.....".

That is why there is now an ACT Legislative Assembly Inquiry into Drone Delivery Systems in the ACT.

Because the people have spoken.

Yours faithfully,

ROBYN MCINTYRE

[REDACTED]

PUBLISHED

The Canberra Times' 28 January 2019 p2 "Government backs drones", is incorrect in stating Project Wing has "sought the same exemptions that enabled its Bonython trial, including permission to fly an aircraft within 30 metres of a person....".

The correct distance within which a Project Wing drone can come to a person is "5 metres overhead and 2 metres horizontal distance".

This is the exact wording of the Exemption granted to Project Wing by CASA, as seen in documents obtained under FOI.

It is important to note that this means the drones can fly within 5 metres over a persons head, and 2 metres adjacent to them, without their permission. That is why no other government in the world allows this.

This is why Bonython residents feel unsafe, and outraged. They are further outraged that the ACT Government has subjected them to this without regulating the noise of the drones, which has been measured at 80 decibels.

Yours faithfully,

ROBYN MCINTYRE



PUBLISHED
JAN. 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 051

Date Authorised for Publication: 27 February 2019

VIA POST:

The Committee Secretary

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

GPO Box 1020, CANBERRA CITY ACT 2601



VIA E-MAIL:

Standing Committee on Economic Development and Tourism

Email: LACommitteeEDT@parliament.act.gov.au

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

SUBMISSION TO: INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT

Personal Details:

Name:	
Postal Address:	
Phone:	
Email: (if applicable)	

Please note, I would like my submission to remain anonymous.

To The Committee Secretary

I would like this submission to be considered by the above Inquiry. I will start by addressing the following Terms of Reference;

(1) (d) The Extent of Any Environmental Impact As a Result of Trialling Drone Delivery Technology on:

(i) Residents within the trial area:

- I have a friend who lives in Bonython who has a neighbour who has been getting up to twenty deliveries a day from the Project Wing drones. Each delivery involves two flyovers by each drone for each delivery. I have been shown video footage of these drones during this operation.
- I am shocked by the noise the drones make. It has been measured at 80 decibels and the EPA limit for residential noise is 45 decibels. It is a high pitched screeching noise like an FI racing car.
- I am also shocked and disturbed at how close the drones are allowed to fly over and around people's homes as they go about their daily lives, which are continually disrupted because of the drones.

2.


- And am seriously concerned and shocked by the gross invasion of privacy (as the drones have cameras constantly filming) that the ACT Government is allowing to be perpetrated on my friend and all other Bonython residents. I think it is an absolute disgrace.
- I am aware Project Wing is moving to operate in Gungahlin. I live in Kaleen, which is not far away, and I strongly object to having drones anywhere near my home and my family. My wife is unwell, and the noise would greatly adversely impact on her health.

I think the ACT Government should be ashamed of itself for inflicting such a trial of drones on people over and around their homes without consulting them and without providing any avenues of complaint. I think the ACT Government has put money before people and is acting unethically and without integrity.

I think all future drone operations should be ceased until the results of this inquiry are available. I also don't like the idea of a large American conglomerate coming to Canberra and using its money to buy and abuse power and influence. I would like Project Wing to go back home to America and leave us alone to live our lives with our peace, privacy, health, happiness, and human rights intact, **ALL OF WHICH THEY ARE DISRUPTING WITH THEIR DRONE OPERATIONS IN BONYTHON.**

Thank you.

Yours faithfully,



11 February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 052

Date Authorised for Publication: 27 February 2019

VIA POST:

The Committee Secretary

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

GPO Box 1020, CANBERRA CITY ACT 2601



VIA E-MAIL:

Standing Committee on Economic Development and Tourism

Email : LACommitteeEDT@parliament.act.gov.au

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
SUBMISSION TO: INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT

Personal Details:

Name:	[REDACTED]
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	

Please note, I would like my submission to remain anonymous.

To The Committee Secretary

I would like this Submission to be considered by the above Inquiry.

My husband, Don Oxley, has sent you a submission, and I would like to concur with everything that he has said.

I reiterate that I have ongoing health issues and the constant extreme noise of the Project Wing drones would greatly adversely impact my health. Also I would reiterate that I am extremely concerned about the threat to our privacy posed by the drones' cameras. I think this an utterly unacceptable situation.

I conclude by saying that I think the ACT Government's conduct of this trial is unethical, that they don't care about people only money, and that I won't vote for them in any election because of their lack of integrity and concern for people. Also I don't like big American companies coming to my country/home using big money to buy power and influence. I wish they would go back to where they came from.

Thank you.

Yours faithfully,

[REDACTED]

[REDACTED]

11 February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 053

Date Authorised for Publication: 27 February 2019

Inquiry into drone delivery systems in the ACT

Standing Committee on Economic Development and Tourism

Adam Rucinski-Stanek

[REDACTED]

[REDACTED]

[REDACTED]

I believe Canberra is an excellent base for drone trials to occur. Locals heavily rely on delivery already and drone delivery in a densely populated city with minimal high rise buildings would be an innovative and efficient way to reduce congestion on roads and also result in reduced green house gas emissions from delivery vehicles. Canberra aims to be completely reliant on green energy and this is one effective avenue for reducing our air pollution. Deliveries would be able to occur at higher rates and would occur much sooner, saving locals money and time.

I was a participant in the drone delivery trial in Bonython over the last half a year. I cannot commend the trial enough; Wing provided a convenient and reliable service. The operators always clearly communicated their intentions and were open to any questions or assistance needed. They ensured all those involved were comfortable by explaining how the delivery process worked.

The ability for drones not only to deliver food for convenience, but also medicine at incredible speed to those who cannot leave their home or in an emergency is compelling reason enough to establish this reliable delivery method.

Drones are an inevitable part of our future, as motor vehicles and commercial aircraft became popularised, they also received backlash due to 'disruption', and yet they form a part of our everyday lives, Drones have been built to fight fires, rescue drowning swimmers, replant entire forests saving energy and time. It is a new technology like smartphones that will change the way we live for the better and provide a complete new array of services and conveniences for the population.

There definitely does need to be regulation and oversight on the use of drones within not the ACT and Australia as a whole. I use a personal drone for filming natural landscapes, but it is

would be too easy for someone to utilise a drone for nefarious purposes, whether its surveillance or disruption of restricted airspace. A simple licencing and registration system for both personal drones and businesses should be put in place.

As well as this, flight height restrictions on airspace, separating the sky into areas used for personal drones, business use, private aircraft and commercial aircraft, so all areas can be utilised safely.

Privacy is a topic often raised in the drone discussion. There needs to be regulation on surveillance and regulation of any business that utilises drones, but also an improved awareness from the public. The Wing delivery team explained to me the delivery system and they did not use a camera to record anything during flights, only to ensure the space was clear and the delivery was safe, which is obviously essential. If residents were aware of this, I am sure they would have felt more comfortable.

I do not believe there is any major environmental impact by drones, if so, only positive. Other than reducing carbon emissions as mentioned above, they do not effect the environment adversely in any way. I lived an area which had fairly heavy use of the drone delivery's and I utilised them often myself. The area is rich in natural life and I observe it daily, I noticed no adverse impacts on any plant or animal life. All the birds and kangaroos behaved as normal and remained in the area. The effect on wildlife was as small as commercial aircraft and private motor vehicles.

The noise levels produced by the delivery drones were also minimal. Throughout the entire trial many deliveries took place and I barely noticed their presence as deliveries were completed. My residence is one of the closest to the launch site and is flown over fairly frequently, but the impact was minimal to none. The loudest noise is produced only momentarily when the drone delivers something directly to your property, this is also minimal impact.

I do not have any domestic pets and so cannot comment.

On a personal note, I really enjoyed the service Wing provided, it was a fun and new delivery system and the quality of the goods provided was excellent. Any guests I had also really enjoyed the service. I would strongly recommend the service be endorsed and available to all Canberra residents.

Regards, Adam



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 054

Date Authorised for Publication: 27 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Standing Committee on Economic Development - Inquiry into Drone Delivery System in the ACT.
Date: Tuesday, 19 February 2019 12:16:15 PM

To Whom it May Concern,

Submission: Inquiry into the drone delivery system in the ACT.

Personal Details:

Name: [REDACTED]

Postal Address: [REDACTED]
[REDACTED]

Phone: [REDACTED]

Email: [REDACTED]

Please note, I would like my submission to remain anonymous.

I would like to start by saying that at this point in time I am unaffected by the drone delivery system. However, close friends are directly affected (living under the drone flight path in Bonython), as well as my daughter and her family, who live in Gungahlin and will be affected if the 'permanent' base is set up in Mitchell. So on their behalf, I wish to make this submission.

- (1) a) - I have been informed that no consultation was made with local residents of Bonython when it was decided to hold the trials. Nor has the northern suburb residents been formally advised of the 'permanent' base to be located in Mitchell. In my humble opinion, the Project Wing is unwanted, anywhere in the ACT, or Australia for that matter.
- b) - (i) - Investment by this Google-owned company may well have been made, but at what cost to Territorians?
(ii) - I can't imagine a significant number of jobs will be created by this new enterprise. But I feel a number of jobs and business will be adversely affected by their introduction.
(iii) - I don't believe, or haven't heard about any significant collaboration with local industry and academic institutions having taken place. It certainly hasn't occurred with affected residents where the trial is now being conducted. In fact the direct impact on residents far outweigh the effects on local industry and academic institutions.
- c) - The extent of regulatory oversight appears to be non-existent. Project Wing answers to no one. As far as I know, they won't/haven't reported any trial results to anyone; not even the ACT Government; who agreed to the trial in the first place. They are unregulated. CASA, AMSA and EPA appear not to be involved, as any regulations imposed by these authorities on other individuals and industry seem not to apply to Project Wing. Which is totally irreprehensible.
- d) - The environmental impact I believe is significant.
(i) - the residents are disturbed by the very loud, incessant noise the drones make as they pass either overhead, or nearby. I have been told that over a 4-hour period there were 20 flyovers (10 deliveries) across/above their backyard. Some residents, I have been told about, go away to other areas (e.g. coast) to get some relief from the annoying noise.
(ii) - residents have reported to me directly that the birds have disappeared while the trial has been going. In fact, when there was a brief cessation of the trial a few months ago, the birds did return, but only until the trial started-up again.

(iii) - residents have told me of the neighbourhood dogs barking as the drones approach and don't stop till they are out of ear-shot. Obviously these drones disturb the dogs greatly. This not only adds to the noise of the drones themselves, but also upsets the residents to see and hear the distress of the dogs.

(iv) - I have no comment.

e) - There is NO way to improve the use of drone technology within the ACT. It wasn't asked for. It isn't wanted. I don't believe they serve any purpose other than at sporting venues and maybe individual's hobbies. In any other capacity they are non-essential. They are invasive, both in term of people's privacy and noise levels. They are totally abhorrent.

f) - It has been disclosed recently that during this drone trial there have been no delivery costs incurred by the consumers; they only pay for their order (e.g. coffee, etc.). So, in effect, there has been no economic evaluation of this trial. Hence the economic impact remains unknown by the ACT Government and the community.

f) - I have no comment.

Thank you for your consideration of my submission





LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 055

Date Authorised for Publication: 27 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Drones in the ACT
Date: Tuesday, 19 February 2019 12:47:42 PM

While there may be some economic benefits to those who have drones it is the rest of the community that must bear the real costs. These being: noise for citizens, frightened wildlife, and an ever larger citizenry. If people are so excited about getting their coffee delivered, we should encourage them to get on their bike or go for a walk to get it. It's noise free and will reduce the health budget. I really fail to see the benefits for the majority of us, only those who own the drones, or those too lazy to get up and go to the shops (those with mobility issues excluded).

Please treat this as an anonymous submission and not publish my personal details.

Thanks, [REDACTED]
[REDACTED]
[REDACTED]

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LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 056

Date Authorised for Publication: 27 February 2019

Submission by Belconnen Dog Obedience Club to the ACT Government - Inquiry into drone delivery systems in the ACT

8th February 2019

Terms of Reference:

This submission is concerned with the bolded sections of the Inquiry Terms of Reference:

(1) the Standing Committee on Economic Development and Tourism inquire into and report on drone delivery systems in the ACT, with particular reference to:

- (a) the decision to base the trials of the technology in the ACT and surrounding region;
- (b) the economic impact of drone delivery technology being tested in the ACT including the:
 - (i) investment that has been brought in to the Territory;
 - (ii) number of jobs that have been created as part of the trial; and
 - (iii) extent of collaboration with local industry and academic institutions;
- **(c) the extent of regulatory oversight of drone technology at various levels of government including but not limited to:**
 - **(i) local authorities such as the Environment Protection Authority, Worksafe and Access Canberra; and**
 - **(ii) Commonwealth agencies such as Air Services Australia and Civil Aviation Safety Authority;**
- **(d) the extent of any environmental impact as a result of trialling drone delivery technology on:**
 - (i) residents within the trial area;
 - (ii) native wildlife;
 - **(iii) domestic animals;** and
 - (iv) greenhouse gas emissions;
- (e) ways to improve the use of drone delivery technology within the ACT;
- **(f) any other relevant matter;** and
- (g) information privacy; and

(2) the Committee report to the Assembly on the matter no later than the last sitting week in 2019."

Introduction

The Belconnen Dog Obedience Club (BDOC) is a not for profit, member funded, volunteer organisation that provides a range of training and competition opportunities for dog handlers and their dogs of all breeds.

It was formed in 1975 to provide dog training instruction and facilities for people living in North Canberra, Belconnen and Gungahlin. The Club's main activity is obedience training for pet dogs, and we also offer training in dog sports including agility, dances with dogs, flyball, obedience trialling, rally obedience and disc dogs. The Club conducts competitions in these dog sports throughout the year attended by visitors from and across the ACT and interstate.

We operate from our club grounds at 1 Morriset Road, Mitchell. Club activities with dogs training or competing occur seven days a week throughout the year with a short break of approximately three weeks over Christmas/New Year.

The club is administered by a Committee of volunteers, elected at the Annual General Meeting held in August each year. The elected Committee for 2018 - 2019 is as follows:

Christine Bates - President

Margo Hellyer - Vice President

Monique Meacham (elect) - Treasurer

Kate McGee - Secretary

Catherine Griffin - Disc Dogs representative

Heather Swinbourn - DWD representative

Lisa Borthwick - Agility representative

Lyndal Hasselman - Canine companion representative

Maelyn Draper - Obedience and Rally Obedience representative

Sally Provins - Flyball representative

Anya Withell - General member

Katherine Waterhouse - General member

The committee represents the interests of all our club members – which number more than 500 – and has the authority to make this submission on behalf of its members. We will also encourage individual members to make submissions in addition to this document.

Background

On 3 December 2018, BDOC President Christine Bates received an email from Wing, a drone delivery company currently establishing a delivery site in Mitchell. Wing representative Jesse Suskin's email said Wing wanted to reach out so BDOC would have a point of contact for any questions about the company.

They stated that we may have been aware of recent reports on Wing drone delivery and their plans to offer their drone delivery service to the Gungahlin area. This will include the suburbs of Crace,

Palmerston, Franklin, Harrison and Gungahlin. He said operations were due to begin “next year” – in 2019.

A meeting between Wing and BDOC was held at BDOC clubrooms 6-8.30 pm on 10 December 2018, chaired by Lisa Borthwick and attended by other BDOC committee members Margo Hellyer, Lyndal Hasselman, Heather Swinbourn, and Anya Withell.

Wing representatives were Alexa Dennant and Sara Hourigan.

Wing explained about their trial program in Bonython, Tuggeranong and Royalla.

The Wing trial program at Bonython was located quite close to the Tuggeranong Dog Training Club grounds at Rowland Crescent, Greenway. A number of dog sports competitions were held whilst delivery drones were flying and caused considerable disturbance to dogs, their handlers and officials. The visual impact of the drones and their noise level were the most commonly reported concerns. A number of BDOC club members participated in these competitions and have expressed serious concern over the potential impact on BDOC activities in Mitchell.

At the meeting, Wing indicated that after the completion of the Bonython trial their next phase of operation is establishing a drone delivery operations site and warehouse at Vicars Rd Mitchell. This is within one kilometre distance to the north of the BDOC training grounds. Delivery services would fly north of the operations warehouse to the Gungahlin suburbs of Crace, Palmerston, Franklin, Harrison and Gungahlin.

Wing stated they have no intention to operate deliveries near BDOC at this stage, but conceded that this may change in the future as their business model develops. This potential change to delivery flight paths is of major concern to BDOC, as is the prospect of other commercial entities setting up business within the north Canberra region, including pick up as well as delivery destinations.

Wing presented some facts about their planned drone operation in response to questions from the BDOC members present. We were told that:

- Wing plans to make 30-50 flights per day initially, increasing as demand increases
- Flights are minutes in duration – depending on the destination
- No pickups from local businesses are planned – all flights will be from the Wing Mitchell warehouse to their destination and back to Mitchell
- Each flight is conducted by a licensed Wing operator; Wing has a chief pilot who is responsible for all air operations
- They fly their drones at approx. 130 km/h to 200 km/h
- Flight height is at least 400 ft above ground level (AGL)
- The drones use low resolution cameras to assist with identifying their flight path and obstacles
- The drones to be used from Mitchell have been modified to reduce noise and rotor speed following the Bonython test operation and feedback from local communities
- When operational, they will conduct deliveries 7 am to 7 pm weekdays and 8 am to 7 pm weekends and public holidays

BDOC made it clear that the club was concerned that future expansion of operations by Wing over the club grounds would have an impact on all our activities, as well as potentially affecting individual dogs. The concerns are that the noise level and visual impact of drones is distracting and potentially

frightening or anxiety-inducing in dogs and rendering them unable to train or compete. Dog and human safety may be at risk. Dog handlers, instructors and official are also impacted.

We asked Wing whether they were aware of any scientific research available on the noise or other impacts of drones on dogs. However they were not aware of any research.

Wing listened to our concerns and acknowledged they need to have community support to achieve a 'social license to operate' their business.

At our request, they offered to prepare a series of Questions and Answers that we can provide to our members on Wing's planned operations. The Wing Q&A was provided to us on 21 December 2018 and is being prepared for publication on the [BDOC website](#).

We expressed to Wing a desire to not have drones operating anywhere near the club or what we described as the EPIC/Canberra Racecourse animal precinct – pointing out that dogs and horses visit EPIC frequently for competition events. We made it clear that we request that Wing considers this entire area a no-fly zone now and in the future.

At the end of the meeting, Wing agreed to continue to keep BDOC informed as its operations develop and when operations begin, as well as any plans to expand operations near our club grounds.

BDOC understands that the Civil Aviation Safety Authority (CASA) is the airspace regulator. Wing has been licensed by CASA to conduct its operations both in the Tuggeranong/Bonython trial and from Mitchell. There does not appear to be any other regulation applied to commercial drone delivery services and their impact on the community, either from ACT or Commonwealth agencies.

Key issues

BDOC has identified serious issues and concerns regarding the negative impact of drones on dog training and competition activities at the club:

- Drone flight and operations in close proximity to the BDOC grounds is likely to have a significant impact on some individual dogs causing heightened levels of anxiety and fright. This may impact a dog's ability to be under handler control during training and competition activities. There is potential for dogs to become so frightened that there is a **risk to dog and human safety**. A frightened dog is difficult to bring under control and may potentially bite and be aggressive.
- Individual dogs reacting to both the sight and sound of drones is likely to cause some dogs a degree of stress and distraction which seriously impacts a dog's ability to train or compete. Such impacts were directly observed during the Tuggeranong/Bonython drone trial at the Tuggeranong Dog Training Club. This distraction is distressing to dog handlers and may make it very challenging to conduct training classes and run competition trials at our grounds. This impacts all BDOC members, class participants and instructors, trial competitors and judges/officials.
- Such potential disruption to classes and trials potentially impacts on BDOC's membership and on our valuable role in the community as a provider of pet dog obedience training.
- Expansion of drone delivery services by Wing and other providers across North Canberra where future flight paths are across or near the club grounds and other animal facilities such as BDOC, DogsACT and the EPIC precinct appear to have little or no regulatory oversight of the community impact of commercial drone activities. The Civil Aviation Safety Authority is not concerned with community impact.

BDOC position and next steps

Following the meeting with Wing and subsequent discussion by the BDOC Committee on 16 January 2019, the club has resolved to undertake the following actions to make our concerns known and to gather support for our position and recommendations:

1. Formally acknowledge the meeting in a letter to Wing and thank them for the Q&A document, outline our concerns in writing and reiterate our request that Wing does not operate over BDOC now and in the future
2. BDOC prepare a letter outlining in detail our concerns regarding Wing's operations and send it to:
 - a. CASA
 - b. ACT Government (Sport and Recreation portfolio and other relevant Ministers as identified)
 - c. Government Members for Yerrabi (ACT Government electorate where BDOC is located)
 - d. Dogs ACT to seek their support
3. Acknowledge correspondence received on 2 January from Canberra Racing Club and state our concerns
4. Publish the Wing Q&A in the BDOC newsletter and on our website to inform members
5. Create and promote a member rule that no drone deliveries are allowed within the BDOC grounds
6. Maintain liaison with Wing, participate in any community meetings/liaison Wing may arrange in the future
7. Monitor the media and other channels for future developments or changes in community attitudes/government policies and regulation
8. Any other actions in addition to the above as deemed appropriate by the Committee

The Committee only became aware of the ACT Government inquiry into drone delivery systems in the ACT on 28 January and began preparation of this submission as a result.

Conclusion and Recommendations

In conclusion, BDOC welcomes the opportunity to make this submission and applauds the ACT Government's initiative in establishing this Inquiry. The BDOC position in the strongest terms is that we are greatly concerned by the impact drone delivery operations would have on individual dogs engaged in activity at the club, the risks to animal and human safety, and on our general ability to conduct classes and competitions.

In summary:

- BDOC wishes to see established a drone 'no fly zone' for drone deliveries within at least one kilometre over and around the BDOC club grounds that takes effect both now and in the future and is not limited to just Wing, but applies to all drone deliveries established in the ACT.
- We believe the operation of deliveries by drone would have a severe effect on individual dogs – which has been experienced and observed by BDOC members and members of other

clubs in the ACT during the Wing trial in Bonython and over or near the Tuggeranong Companion Dog Cub.

- We believe that drone delivery activities over or near our club would impact negatively on the club's general amenity and our ability to operate and conduct classes that contribute to the training and education of dog owners who join our club.
- We provide a valuable community service as evidenced by our membership numbers and our training philosophy, which attracts dog owners from across the north Canberra region to train and compete at our club.
- Drone deliveries near or over our club would also have a severe impact on regular dog sports competitions conducted at our club, which are attended by members of our own club, other ACT dog clubs and competitors from interstate clubs. Our competitions are conducted under the auspices of Dogs ACT and the Australian National Kennel Council. They attract visitors to the ACT and contribute not only to our club, but also to the ACT economy and reputation.

We ask the Inquiry to consider the following **Recommendations**:

1. BDOC therefore urges the ACT Government to consider the proven and implied negative impact the operation of deliveries by drone will have on BDOC, its members, their animals and our ability to continue to operate as a club and provide services to the north Canberra communities.
2. BDOC requests that the ACT Government and this Inquiry consider the establishment of extensive and adequate 'no fly' zones for drone deliveries over sensitive areas of community activity such as our club grounds, and other animal training and competition sites. Specifically we request no-fly zones be established with a one kilometre radius of the Belconnen Dog Obedience Club grounds, and the EPIC Precinct.
3. We also request that the ACT Government represents the best interests of community based organisations such as BDOC to the relevant federal authorities such as the Civil Aviation Safety Authority and other relevant bodies to ensure our rights, needs and ability to continue to operate are protected.

Thank you for your consideration and we would be happy to supply further details if required.

Submitted by Lisa Borthwick on behalf of **Christine Bates, BDOC President for the BDOC Committee and our members.**

BDOC Contact Information

BDOC drone liaison coordinator: Lisa Borthwick, [REDACTED]

[REDACTED]

BDOC Email: [REDACTED]

Postal address: PO Box 879, Mitchell ACT 2911

The clubhouse is located on Morisset Road, in Mitchell ACT (corner of Flemington Road and Sandford Street).



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 057

Date Authorised for Publication: 27 February 2019

Standing Committee on Economic Development and Tourism

Personal Details:

Name: Inger Christina and Frank Exposito

Postal Address: [REDACTED]

E-mail: [REDACTED]

Occupation: Retired

The Committee Secretary,

Two years ago we moved to Bonython, adjacent to Stranger Pond, loved the area, so quiet and serene. Lots of birds, wildlife and close all amenities.

Unfortunately that all ended when Project Wing started their “exclusive trials” to a “limited number of households in Bonython” as follows:

- a. The initial delivery dates were Friday to Sunday. Later Wings included Thursday and not long after that they included the rest of the week except Sunday
- b. The noise is piercing, extremely annoying and can be heard from afar, even inside a double glazed home.
- c. The bird life disappeared and the noise pollution appeared in our environmentally friendly ACT.
- d. Drones play an important role for farmers and emergency services, but how important is a service like this, right next to a major shopping centre compare to the wellbeing of the citizens.
- e. There is no get away from the noise, the noise is everywhere all day long in the backyard, a walk around the pond or at Pine Island reserve.
- f. We are both retired and the impact on our lives has been detrimental, as we are home 24/7.
- g. Wings have conducted this trial without any independent authority in rules and regulations and population feedback.

We strongly oppose to Wings drone delivery service, being granted permission to become a drone service in our ACT neighbourhood suburbs. The ACT government should have the interest of the ACT home owners at heart.

Yours faithfully,

Inger Christina Exposito
Frank Exposito



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 058

Date Authorised for Publication: 27 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	██████████
Postal Address:	██
Phone:	██████████
██████████ (if applicable)	████████████████████

To the Standing Committee on Economic Development and Tourism

I am a Bonython resident and the convenor of the Bonython Against Drones Community Action group (BAD).

This is my personal submission (though I do lapse to using 'we' a lot) on why the delivery drones are not an appropriate service for Canberra, with more detrimental consequences than any perceived positive benefits. Although this is my submission, I believe the issues are shared by the hundreds of members and supporters that our group has attracted.

It also reflects the views of **80%** of the Bonython residents affected by the delivery drones – the 80% figure derives from a very extensive door knock by our volunteers did of most of the households in the delivery area while gaining signatures for our Petition presented to the ACT Legislative Assembly (1024 signatures).

Wing, a Google company, has consistently stated in its publicity that only 'some' residents are opposed to the trial. This is blatantly untrue, and a correct statement would be that only 'some' residents participated and only 'some' residents were in favour of the trial.

Wing have said that they had 160 people sign up for the trial. However, we know from comments to us that many of these people did not actually use the service. We have many people who told us that they ordered once but were put off by the noise and other aspects of the drone service and did not use the service again. We have noted that as the trial progressed, less deliveries appear to have been made, with many of the delivery statistics made up by multiple deliveries to the one residence (to deliver a meal takes a number of deliveries due to the small capacity of each drone delivery).

The rest of the ACT can also be considered to be not in favour of a drone delivery trial if other polls are taken into account. On 15 December the Canberra Times published an Insiders poll (so not just a Bonython resident's poll) with **68%** against the drones, 17% for and 15% unsure.

The RiotAct conducted a poll on the delivery drone service that showed **66%** saying 'keep them out of my backyard'.

ABC Radio conducted a poll on 13 Feb 2019 with 793 participants, and **65%** were against the delivery drones.

Why hasn't a public meeting been organised on this issue? For example, in 1996 a proposal was put to the Tuggeranong community to have jet skis operate on Lake Tuggeranong. A public meeting was held, organised by the ACT government, where the great majority of participants rejected the proposal, mainly on the basis of the noise created. No such opportunity has been afforded Bonython residents to comment on the delivery drones. But hopefully, the truth will out.

1) (a) The decision to base the trials of the technology in the ACT and surrounding region

Previous to the Bonython trial, a trial was conducted by Wing in the surrounding rural region. This was in the Royalla region. It would have been expected that this delivery service would have been welcomed by rural residents, and that is the publicity expounded by Wing. However, once our Bonython Against Drones group started, we received feedback from residents in the Royalla area that in fact there was much opposition to the drones, and the local community newspaper editor to us she was contacted by residents expressing their concerns. We were informed that these people felt that their complaints and concerns were completely ignored.

There was no real consultation with Bonython residents. Wing did conduct a presentation at the Tuggeranong Community Council in early 2018, but I believe I may have been one of the very few Bonython residents present, if not the only one. A video of a drone flight, without the drone's noise being apparent, was shown. Wing apparently held a 'fun day' to show the drones, but I certainly did not see any publicity about this and comments on facebook indicate that hardly any Bonython residents knew about this event. Even so, a jumping castle and sausage sizzle type event hardly can be classified as a real consultation event.

Wing did a letterbox drop and called it consultation. This was an advertising brochure asking people to sign up. It was not delivered to residents with 'no junk mail' signs on their box, and many others have said they did not receive it. It seems obvious that an advertising brochure cannot be considered as consultation.

The ACT Government did no consultation. Not a single resident was asked if they wanted to participate in a trial that saw drones flying over their heads, with hot drinks and food. Wing has said that the only people involved in the trial were their 'testers' – those who signed up for orders. However, every resident in the trial area was involved whether they wanted to be or not, especially those near neighbours to people who had deliveries. Residents have described themselves as guinea pigs in an experiment. You could not but be involved if the drones flew overhead or came near.

It was called a trial. I believe it was a farce of a trial, set up to deliver a predetermined outcome. As we soon discovered, there was no terms of reference available for residents to look at, there was no governance structure; no person, body or agency was willing to say they were overseeing or managing the trial. Basic information such as when the trial would end was not forthcoming. I had a phone conversation with Jesse from Wing, early in the trial, who would not tell me the end date of the trial (even though we later found this was on the lease) or give me any real answers to any questions I had.

There was no avenue for feedback set up by the ACT Government or any other agency. Minister Mick Gentleman advised on his facebook page and correspondence that feedback should be given to Wing. When I wrote to Wing asking them, in the interests of transparency and good community relations, that they release the feedback they received, Wing advised that they would not do so. They stated they would not be releasing the feedback to anybody including Government, but only 'a summary'.

CASA advised that they were not monitoring the trial and that they expected Wing to self-report any incidents and problems. Of course, self-reporting has proved to be an outstanding success in other areas such as finance and banking! In this so-called trial, it has failed again.

The decision to base the trial in the ACT, and in particular Bonython, did not include consideration of the impact of such a trial on the residents. There was no consulting the residents of Bonython, nor were any businesses in the Tuggeranong area consulted or afforded an opportunity to comment.

The terms of the trial were largely unstated and unclear. Wing claimed it “envisions a future where drone delivery is the safest, fastest and most environmentally friendly mode of small item transport, and everyone can benefit from having commonly-needed goods available to them”. This statement has no relevance for unwilling participants in a delivery trial who did not ‘sign up’ for deliveries (the great majority of residents). In fact, in my opinion, the trial miserably failed to achieve its aim to demonstrate the Wing statement above.

There has been no attempt to do an independent review or to survey Bonython residents now that the trial has ended. No mechanism for an independent review was envisaged. The only substantial survey has been conducted by the Bonython Against Drones group, finding a huge majority of residents against the drone trial. Mark Parton MLA conducted his own smaller doorknock and stated that he was surprised by the level of opposition to the drone deliveries (on his facebook page), finding only a small number actually in favour.

This was not a transparent, well organised, well run, accountable trial – I consider that the trial was a total failure, poorly set up, with no governance, no independent feedback mechanism, no independent assessment and in the end, no justice for aggrieved residents.

(b) The economic benefit of drone delivery technology being tested in the ACT including;

(i) The investment that has been brought in to the Territory.

At the end of this trial, it is difficult to see any investment that has been brought into the Territory. In fact, as the delivery was free, a licence fee applied to the Wing base, wages and many other expenses had to be paid – the trial must have been an expensive, very financially negative exercise. Expenses would also include the payments made to Community organisations such as \$10,000 to one community council and \$6000 to another (that we definitely know of).

No new businesses established in the ACT during the trial. The drone delivery service does not offer a new service – they are delivering existing products. What they offer is only a different method of delivery.

There are already numerous delivery companies and deliverers. Every meal delivered by a drone means that a delivery driver or rider has missed out on making delivery. For every dollar earned by Wing, someone else misses out on earning a dollar.

I would question what the nett economic benefit would be in substituting one delivery method for another. Indeed, delivery drivers and riders are paid for their work, spend their earnings, pay taxes and fees and contribute to the Territory economy in many ways – as do the companies that employ them.

Drones are machines that earn no wages and pay no taxes. A company that operates a drone delivery service employs minimal workers, requires minimal infrastructure and would contribute little in the way of revenue to the ACT taxpayer.

In Wing’s paper ‘Drones: delivering benefits to the Australian Capital Authority’, they consistently state that their projections are mainly based on taking business from existing deliverers such as Uber Eats and Deliveroo. The figures appear to be based on hard to justify (pie in the sky) assumptions.

A major limitation of drone delivery is the small payloads the drones can carry – a couple of coffees or a burrito. They cannot deliver a whole pizza for example. This means that a meal will take multiple flights to deliver. A lady in Bonython whose neighbour participated in the delivery trial had to endure up to 10 drone deliveries or more within an hour, for her neighbours to have a meal. In contrast, other services can deliver a whole meal and to a number of households.

Economies of scale come into play. If other goods are to be delivered in the future, such as postal packages, then this becomes even more obvious. A delivery truck can carry hundreds of parcels of all shapes and sizes, impossible for a drone. A fast food delivery driver can cart full and multiple meals.

Wing, of course, is an Alphabet/Google company. It is interesting that the licence and other documents (obtained under FOI) are largely signed by a Google representative. Google is an international company, and I would ask where the revenue from the Wing will be recorded, likely overseas or interstate. The Australian Government has recently changed the tax laws to attempt to gather some of the tax revenue being lost overseas but it is too early to see if the sought for benefits will come to fruition – in any case, that will not benefit the ACT.

This all means it is problematic how much revenue would actually come to the ACT Government.

I have been told that the Wing business may lead to a Google Campus coming to Canberra. However, a drone delivery service such as proposed by Google operating from Mitchell should not be equated to a Google Campus or other technological investment. These are entirely different beings and setting up a Google Campus would not require a drone delivery service component. This is evident from the existing Google Campuses, in Australia and elsewhere, that do not have a drone delivery component. A drone service does not, in any way, guarantee a Google Campus or further Google investment.

(ii) The number of jobs that have been created as part of the trial

Wing employed a small number of people only. Other workers involved in the trial were employees or contractors of other companies, existing employees I believe. Wing have stated that they will have 24 employees in their planned Mitchell premises, hardly a huge number. It seems some of these people will be existing employees of other companies, such as baristas.

I must repeat that the delivery drones are 'stealing' business from other delivery services and other business. If the drone delivery business is to expand to thousands of deliveries a day, as envisaged, there will be many less deliveries by other companies, it is part of their published business plan to take services from companies such as Uber Eats and Deliveroo, let alone other businesses who have their own deliverers. This leads to the conclusion that there will be a nett loss in people employed in the delivery business, especially the fast food delivery business.

Job losses not creation.

Local Business

Wing have been using large, national chains in their deliveries. Local businesses are not impressed, with local take-aways, chemists and others fearing that they will lose business and revenue to the drone deliveries. Drone deliveries mean less foot traffic to the bricks and mortar businesses. Will the national chains taking part contribute as much revenue, if any, to the ACT as do the local businesses and their employees? That is very doubtful, meaning net loss to the Territory.

(iii) extent of collaboration with local industry and academic institutions.

I am not aware of any such collaboration, there has been no news stories or other information published that I have been aware of. If anything has occurred in the ACT then it must be minimal and doubtful of any economic significance for the trial.

(d) The extent of regulatory oversight of drone technology at various levels of government including but not limited to:

(i) Local authorities such as the Environment Protection Authority (EPA), Worksafe and Access Canberra

Early in this trial Bonython Against Drones attempted to discover who held the regulatory oversight for the trial. We were met by a great deal of resistance from all levels of local and Federal government to any suggestion that they might be regulating the trial. No one was 'in charge'. There is no indication that this lack of oversight will not continue in any future drone delivery activity.

The prime complaint of residents has been the noise, loud and high pitched, described as being like a F1 racing car or a demented whipper snipper. A NASA blind test study found that drone noise was the most annoying noise compared to other noises such as bikes, cars and trucks. A resident with an app on their phone has measured the noise level at over 80 decibels. The EPA

has said that drone noise is not in their ambit and they are not interested in measuring it. In fact, no agency local or federal appears to want to take responsibility for drone noise.

I have no knowledge of Worksafe being involved and would be surprised to know that they have been involved in the trial.

I believe that Access Canberra received many complaints about the drones, especially the noise, but there is no indication that they acted in any way, except perhaps to pass on the complaints to other agencies who were not interested in acting on the complaints.

I have been in contact with the Environment, Planning & Sustainable Development Directorate. Wing (Google) were given permission to overfly parks and reserves in the trial. Part of the conditions on Wing was that they would commission an avian study on the effect on birds. I was astounded to be informed that this avian study would not be made public, and I believe not even the government was to receive a copy. But I am dubious what a study commissioned and paid for by Wing would find.

The ACT Minister(s) that one would think would normally be responsible for a trial, or at least overseeing the trial as far as it affects ACT interests, have consistently told us that they do not want to be held responsible in any way, shape or form.

(ii) Commonwealth Agencies such as Air Services Australia, Civil Aviation Safety Authority

Air Services are not interested in drones as they are not manned aircraft, with the exception of rules to keep drones out of regulated airspaces.

CASA has relaxed many of their normal drone safety regulations to allow the drone deliveries. The normal height restrictions of 30 metres above people, obviously in place for drones as a safety requirement, have been downgraded so that the drone can hover over people at a low height of 5m to make their delivery. Overflights of people, roads, etc have been allowed so that the drones can operate. Safety regulations that were put into place for other drone operators have been amended for Wing – apparently the safety of people under drone delivery flights is of much less importance than of people under other drones.

The size and weight of the delivery drones must be considered – they are almost the height of an average person, much bigger than the usual drones that are usually flown commercially or recreationally. But contrary to logic, safety rules have been diminished for a larger heavier drone.

CASA have informed me that there have been no incidents reported by Wing, which I expected (the nil reporting that is, not incidents). We have reported what we consider incidents to CASA such as drones landing in neighbouring properties to where they were supposed to deliver, of the bird attacks on drones, on drones dropping their delivery box on a car in a driveway, of delivery box spilled on a driveway, of a lady nearly having a car accident because of a low flying drone. CASA apparently do not think any of these incidents worth investigating and they have stated they are not actually incidents, as there was no actual 'crash' or injury. I would strongly disagree with that point of view.

These incidents have occurred with the limited number of flights taking place in the Bonython trial. I am very worried about the number and frequency of serious incidents with the proposed expansion of deliveries to hundreds then thousands a day, especially over high-density areas and major roads. Apparently, CASA and Government is not concerned with this marked increase in safety risks at all. But residents I have spoken to are rightly very concerned.

In correspondence from CASA, it appears to me that they have been trying very hard to justify their actions in modifying the regulations to allow Wing to have their trial, the methodology of the trial (especially the lack of oversight and self-reporting mechanism) and the lack of any consultation with the affected Bonython residents.

CASA is currently reviewing all drone regulations. A recent Federal inquiry into drones brought up many questions that have not been resolved. And yet it is proposed that the drone delivery service be greatly expanded when there are only trial guidelines to operate under, with no regulations for delivery drones being enacted or agreed or legislation enacted.

This situation appears incredible to me, would we give approval to any other business proposal when the rules, regulations and possible legislation have not been agreed on and put into place? Especially an activity such as drone flights with so many potential risks?

(D) The extent of any environmental impact as a result of trialling drone delivery technology on:

(i) Residents within the trial area

Residents have been hugely impacted. When the trial commenced it came as a great surprise for most residents, as many have told me. They immediately contacted the only community body in the area, the Neighbourhood Watch committee. The convenor of Bonython Neighbourhood Watch was swamped by phone calls and emails, and contacted myself and some other residents to set up a group – which we called Bonython Against Drones. We set up a facebook page which now has well over 200 members – it is a closed group and we tried to restrict it to local residents. And have many more people on our email contact list. Most people could not believe how loud the delivery drones were.

Residents were reporting they could hear the drones when they had double glazed windows and insulation. In my case they are loud enough to wake me up when they flew over or near our house.

It is true that in law we do not own the airspace above our heads, a fact that many people are not aware of from my conversations (apparently in other countries such as the USA you do have legal rights to airspace). However, I like most other residents would consider that it is not acceptable for any one, private or public, to be making a nuisance and misery of our lives by flying over our properties in the way that delivery drones do. We do have rights to a good quality of life, and we live in communities where individual rights must co-existent with neighbour rights, especially in the areas of noise, privacy and safety. These presumed and real rights are being violated by the delivery drones.

I have written an article describing life under the drones:

Life under the Delivery Drones in Bonython.

Picture this. You are sitting at home when a large drone hovers next to your house, emitting a screaming high-pitched noise 80 to 100 decibels. It delivers some fast food to your neighbour, then speeds off, leaving you shell-shocked. Then it comes back, not once but 9 more times! To do these deliveries, it had to overfly 50 residences or more, from the Wing base and back – 20 very noisy flights for one household delivery. That's what happens in Bonython.

This is what residents have been enduring for over 6 months in our usually quiet suburb. The flights start at 8am and the first one over our house can wake me up in bed, and I am not a light sleeper. At this time of the morning it is probably an urgent delivery of a vital substance – a coffee! After enduring a number of flights overhead while having breakfast, I often cannot stand it anymore and have to jump in my car and escape to somewhere outside our suburb. Other residents have told us that they have left home for the weekend to get away from the drones.

Meanwhile, dogs start barking and going wild. A mother reports that her children will not play outside when the drones are overhead, another that she has great difficulty getting her children to sleep during the day.

An ex-soldier who suffered from PTSD had difficulty coping when the drones started flying over his head, while another woman who suffers from migraines is also stressed greatly every time a drone flies over. Now if you haven't seen or heard one of these drones, they are not like the drones you may see people flying in the park – the delivery drones are almost 2 metres tall and

wide, have many propellers and sound high pitched and very loud, like a demented whipper snipper. The most annoying sound, much worse than your lawnmower (and lawnmowers don't fly over your head.) They can be heard coming from a long way away.

Another lady, a grandmother, was advised by her doctor to get some natural sunshine on her body after a breast cancer operation – she cannot do this anymore as she is afraid of the cameras the drones carry. Privacy is a huge issue for residents, despite assurances from Wing – which, by-the- way, is a Google company, Google signing the licence and other documents.

Another older lady told, at a neighbourhood meeting, her first encounter with a Wing drone. She was walking on a fire trail behind some houses when the drone came overhead, frightening her badly. As she recounted her story, she started shaking and crying and had to be comforted. Of course, some of the people who get the deliveries tell us 'you will just have to get used to it'. When the drones are not flying, it is very quiet on the backyard; that's because there is a distinct lack of birds, with the usual flocks of galahs, rosellas and cockatoos all missing. Only the hardy birds such as magpies and ravens are about. Over the two-week drone-break at Christmas, many birds came back – only to disappear again at the first drone.

Thank goodness for fire ban days, windy and stormy days, when the drones can't fly! So, this is everyday life in Drone Land, Bonython. But perhaps the majority of residents like the deliveries and only some are against, as Wing put out in their publicity? Definitely no! The Bonython Against Drones residents group has hundreds of members. We had no trouble obtaining over 1000 signatures in a paper petition to the Legislative Assembly. Our volunteer doorknockers reported that around 80% of residents they talked to wanted the drones to stop. Gai Brodtmann, MP, has stated that she has been inundated with complaints. Even a separate doorknock by Mark Parton MLA showed a majority of residents against the drones.

This trial is free of delivery charges, and Wing have refused to tell me how much the delivery charge will be if they go commercial. Wing have been receiving feedback, but refuse to share it with us or the government (I wonder why?). At its peak they were flying perhaps 50 flights a day in Bonython - Wing have talked about flying up to 11,000 flights day in Canberra, can you imagine that. We will have to rename Canberra the Drone Capital of the World. A failed experiment, a failed trial.

(ii) Native Wildlife

Bonython is a suburb on the Murrumbidgee Corridor, with parks and reserves. There is a large man-made lake, Lower Stranger Pond. Mt Stranger is in the middle of the suburb. We are used to a great variety of wildlife, especially birdlife.

When the drones started flying our flocks of rosellas, cockatoos, galahs and other birds disappeared. I imagine that a drone looks like a huge bird of prey to birds. This lack of birdlife was my immediate observation, our bird feeder in the back yard was deserted. Confirming my observations, many other residents have told me of the same experience of birds deserting the area, and many have lamented the great decrease in water birds on our Pond. A lady who participates in the annual backyard bird count said the numbers were way down in 2018. Only the ravens and magpies largely stayed around, perhaps as it was coming up to breeding season.

We have had numerous reports of magpies attempting to attack the drones, with one attempt captured on video.

This bird desertion is a huge quality of life issue for us. One of the great joys in living in Canberra, the Bush Capital, is the abundant wildlife. Over Christmas the drones had a two-week break, and

after a few days I noticed many of our birds returning – but as soon as the drones started up again, the birds took off – cause and effect confirmed.

Other people have also told me that the kangaroos decided to move away, and I certainly have not noticed them in the reserve opposite our house in anywhere near the numbers they used to be.

The drones in the Bonython trial flew over parks and reserves, and it would seem that the same ‘scare’ effect on birds occurred in the reserves. See this article that sets out the problems of drones and birds – note though, that the article is about a few drone flights and does not envisage the number of drones that a commercial delivery service entails:

<https://theconversation.com/drones-and-wildlife-working-to-co-exist-83488>

(iii) Domestic Animals

I don’t have a dog. However, when the trial started, I had a number of conversations with dog owners, and people who live near dogs. Apparently, dogs were barking furiously as soon as they could hear a drone coming, barking constantly. People love their pets, and this was very stressful for them. People at the Tuggeranong dog training park, next to the Wing base were very upset with the effect on their dogs.

(iv) Greenhouse Gas Emissions

Delivery drones are high-tech machines, made from expensive materials, obviously not made of environmentally friendly materials – not a lot of bamboo and hemp drones flying around. They carry at least two lithium batteries. They can be used in limited circumstances to carry small loads. To be efficient, a delivery system should be able to deliver a large number of articles for a small fuel outlay. For example, an electric truck can achieve this efficiency.

An article in theconversation.com states that drones can be considered environmentally friendly only in some limited circumstances, but normally other transport is just as good or better – for instance, they make the point that electric power trucks are more efficient especially considering the number of packages they can carry compared to a drone (economies of scale). Small delivery trucks or electric cars delivering food are efficient.

The drones can deliver only small packages, leading to multiple trips to a household to deliver a take away meal for instance. They cannot deliver bulky items or multiple larger items. This is not an efficient means of delivery.

The considerations of current and coming environmentally friendly transport are very important in considering the future direction of delivery services. They also have none of the human environmental concerns that have been experienced with drones such as invasiveness, intrusiveness, noise and privacy concerns. They appear to negate any argument about the environmental benefits of drones over vehicles. The future of deliveries is electric, perhaps incorporating autonomous driven vehicles.

(e) Ways to improve the use of drone delivery technology within the ACT

I am totally for drones in many, many ways. Drones used by emergency services and in emergencies, drones used for wildlife research, for surveying and many other uses. Evoenergy are about to start using drones to survey the powerlines, a great idea. Recently they consulted with us and gave a demonstration, real consultation in contrast to the Wing pseudo-consultation. Drones are a great benefit to the community in so many ways.

However, I see absolutely no community benefits to drones delivering coffee, fast-food and other products that are readily available locally. In fact, the community negative aspects that we have experienced in the drone delivery trial must far outweigh any supposed benefit.

My contention would be that there would have to be extensive and major community and economic benefits for drone deliveries to be seen as worthwhile enterprise, to make up for our loss of amenity and quality of life. Instead this trial has demonstrated to me that a large international company will make misleading claims, ignore any community concerns from the great majority of residents and ride roughshod over complaints, to make a profit. Economic benefits to the ACT are based on extremely dubious claims and taking profits from other companies - profits will be at the expense of existing Canberra businesses and workers.

Delivery services are already provided, for instance local chemists make home deliveries already, local food businesses deliver. Canberra is a city that has numerous shopping centres that are within a short distance in all suburbs. We are not a rural or remote area!

Drone delivery cannot be relied upon 7 days a week. Drones cannot deliver at night, on windy, rainy or stormy days and on high fire danger days. This, of course, would rule out deliveries in many emergency situations.

I cannot see any way that delivery drones can effectively operate to the extent that, to be commercially viable, Wing are talking of thousands of flights a day

(f) Any other relevant matters

Noise

My number one complaint, the same as most people, is the **noise**, which I have described earlier in this submission. The noise is so bad that it is like a mental torture, unlike street noise, lawnmowers or other usual residential noises. When the drones fly it is constant, backwards and forwards so that every delivery is two flights over us, and this was only a trial. I did not choose to live next to an airport, I strongly object to flying machines being imposed on me, flying over my head.

Note that to deliver bigger loads, drones will presumably need to be bigger and more powerful.

Privacy, Invasiveness and Intrusiveness

However, the noise problem is only one problem among many. 'Solving' the noise problem will not solve the other problems. The drones are **invasive and intrusive**. Cars and vehicles are in the street, they may make noise, but they are not flying over residences. Vehicles are not taking footage of my house and backyard. There are great **privacy** concerns.

Flying a drone over private property isn't illegal under CASA rules, nor is filming someone from it, even on their own property.

Wing have assured us that they are only taking limited footage, but we have no way of verifying this claim and there seemingly are no regulations controlling this. Drone privacy laws appear to be a black hole of legislation. Wing have said that footage is sent to the USA and held for 30 days (stated to us at Tuggeranong Community Council last year). Wing, a Google company, say trust us. Frankly I have no trust on this issue. It is extremely worrying to myself and many residents. We know that other drones currently take footage, but the number of envisaged delivery drones is a massive upgrade to the amount that will potentially be taken – and stored who knows where, used for what purpose and who knows how long.

Safety

Safety, as touched on previously in my submission is another very worrying issue. Wing and CASA have assured us that the drones have software that will ensure a controlled descent in all situations. I cannot see how it possible to guarantee this under all circumstances, especially from our concerns of incidents in this limited trial. An effective air control system for drones has not yet been developed, and is a long way off, as it has to incorporate avoidance mechanisms not just for commercially operated drones (and that is very difficult) but also recreational drones flown by amateurs. Recreational users cannot effectively be policed, it is impossible to enforce drone rules on operators who are ignorant of the rules or just ignore them.

In 2016 a recreational drone user was investigated by Australia's CASA after evidently flying a drone over a crowded Bunnings carpark to pick up a sausage at a sausage sizzle. Video appears to show several breaches of the rules, including: flying a drone out of visual line of sight; flying within 30m of people; and flying over a populated area. During the Bonython trial I sighted a number of obviously recreational drone flights, especially in the reserves near Pine Island and Stranger Pond that the Wing drones were also flying over.

What about a bird strike, a collision with another drone (including recreational users especially child operators), lightning strikes? It is possible to think of many scenarios where these large drones can be brought down. This could do serious damage to a person, especially a child or elderly person. They carry hot liquids and foods, as well as being dangerous in their own right.

The number of proposed drones into the hundreds and thousands will exponentially increase the safety risk. A sky thick with drones is asking for trouble. And it is proposed to expand into high density housing suburbs, above busy roads and areas, competing in the air with other drones. This video demonstrates how easy it is for drone operators to lose control of their drones:

https://www.youtube.com/watch?v=kq_Hgg5J-rQ&feature=youtu.be&fbclid=IwAR1aB2rz6JO_7c1AdNfZUvwJnQ4OrcV0dFjr8AI0P9U8z9RwfpW1N0qU8ZY

Wing is wanting to increase to thousands of flights, but we must also take into account other companies such as Amazon who want to join in. I read an article where Google and Amazon are currently developing a form of air traffic control for drones. It seems like a nightmare to me to have the Canberra skies thick with delivery drones. Quality of life here will be non-existent. Cross out Bush Capital. Pencil in Drone Capital.

Wing have also stated that the use of drones will make Canberra streets safer by taking delivery vehicles off the streets. There are no statistics specifically on delivery vehicle accidents that I have found, and no outcry about safety concerns. Will flying hundreds or thousands of drones over our heads be a suitable trade-off for an apparently non-existent problem? Will drones actually take most delivery vehicles off the streets, with the drone's small loads? Perhaps pushbike deliveries will suffer most.

Health and Environment

On Saturday mornings I like to attend Parkrun at Lake Tuggeranong. A recent Saturday morning saw over 400 people running or walking the 5 kms. The ACT Government encourages Parkrun, sports and many other healthy activities - and rightly so. The ACT Government is highly involved in encouraging healthy living, encouraging people to get

out of their homes and get exercise. This is not only very beneficial to people individually but a healthy population leads to a decrease in health costs overall.

Delivery drones encourage the exact opposite – stay at home, get out of your lounge chair to walk as far as the driveway to get your takeaway meal.

There are also concerns with pharmaceutical deliveries, with people not receiving the correct treatment by not consulting a chemist or doctor but instead merely ordering a drone delivery from a list of products, especially for children. Concern has been expressed at drone deliveries for pharmaceutical items – if the goods are delivered to the wrong address, or the drone is forced down in an unintended place, or a child gets to the package – bad consequences!

More at

<https://ajp.com.au/news/chemist-warehouse-in-drone-delivery-havoc/>

Governments are also encouraging environmentally friendly vehicles: pushbikes and electric vehicles. Australia Post is about to introduce a fleet of electric bikes for posties. Electric delivery trucks, electric motor bikes are all coming very soon.

Electric truck production is happening in Australia – see

<https://www.abc.net.au/news/2018-10-30/electric-cars-set-to-bring-500-jobs-to-latrobe-valley/10448344>

Our trial has made international news, with articles in the Wall Street Journal, The Daily Mail and others. These articles have all included the problems that Bonython residents have experienced. National news has taken up the story, including a Current Affair and Channel 7 news. The BBC has run stories – one of their stories echoes many of our concerns:

<https://www.msn.com/en-ae/news/techandscience/why-your-pizza-may-never-be-delivered-by-drone/ar-BBQXUHx>

In conclusion, drone deliveries in a suburban setting are an unnecessary, invasive, service set on replacing existing (and future direction) services. They will not give any substantial economic benefits especially taking into account the losses incurred by other providers and businesses. Any profits made by Wing will be at the expense of jobs in the delivery business, with young delivery people put out of work. These drones severely reduce our quality of life, are intrusive and potentially dangerous. They are not needed or wanted in Canberra.

Nev Sheather



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 059

Date Authorised for Publication: 27 February 2019

From: [Jeanne Houston](#)
To: [LA Committee - EDT](#)
Subject: Drones Debacle
Date: Saturday, 16 February 2019 3:14:59 PM

The drones "trial" in Bonython has been an infuriating experience for my family and me. My hostility to drone delivery is based on two factors: the terrible noise and invasion of our privacy.

Drone noise is very unpleasant to humans, dogs and birds; totally inappropriate in a residential area, where people depend on the quiet tranquility of their homes for their mental health. There is a very good reason why there are zoning regulations, separating residential and commercial areas of a city or town. Drones flying over Bonython (or any other suburb) breaks these rules and must be discontinued.

I often walk my dog around the lower Stranger Pond and have been appalled by the level of noise the drone creates, as well as the frequency of the flights. For example, during my Sunday walk on 26th Oct, the drone flew over five times; which upset my poor dog.

The most upsetting drone experience was Saturday (2nd Feb) when the drones flew over my house eighteen times! It sounded like a war zone! We were forced to close up all our windows to try to muffle the sounds distressing our dog. It is unacceptable to think that we may be required to live like this and accept the diminution of our quality of life.

Secondly, I resent a camera-laden drone being able to take photos around my home exterior or in my neighbourhood. My husband and I purchased our home in Bonython based on certain assumptions about our personal privacy and strongly resent the disregard and disrespect drones represent with this invasion of our privacy. Families with children are even more concerned about this issue.

I have been a consistent Labour Party voter in past elections, but plan to change my vote to the political party who will stand up against this pseudo-"trial" and against the establishment of drone home deliveries.

Please do not allow future drone deliveries in residential areas in the A.C.T.

Thank you.

Jeanne Houston



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 060

Date Authorised for Publication: 27 February 2019

From: [lesley elle](#)
To: [LA Committee - EDT](#)
Subject: Submission to the inquiry into drone delivery systems in the ACT
Date: Tuesday, 19 February 2019 3:40:28 PM

Good afternoon

I am not a resident within the trial drone delivery zone but I am vehemently opposed to any drone delivery service, the exception being for drone medical or emergency services managed and regulated by government agencies.

I recently had an experience with a drone flying overhead while I was swimming in an ocean pool at the coast. I was amazed at how loud and irritating the buzzing sound of the drone was, even when it was quite a distance away, and how low it was able to come to the water where we were swimming.

It was so noisy and intrusive, and completely destroyed the peace, relaxation and essential privacy of an innocent swim.

A couple of dogs close by started barking at the drone, obviously upset by it.

I feel so sorry for the residents in the area of this trial who have to endure hours every day of the noise, intrusion and lack of privacy and security that the drones bring.

I am appalled to think that suburban drone deliveries may be a daily, or more frequent, occurrence over private back gardens and houses.

It will be awful if suburban drone deliveries are allowed for what are really trivial retail purchases - really, is a coffee delivery or fast food delivery, or any other retail purchase, enough of a reason to disturb other residents? as disturbed they will certainly be!

Suburbs are already noisy enough with traffic, lawn mowers, barking dogs, sirens, construction, loud music, but these noises are outside the land area and airspace of a private dwelling - at least the suffering householder can retreat to their own space and not be plagued by the additional noise of a drone flying across their garden.

Will we really allow the sound of drones flying overhead for hours every day to add to community noise?

The drones invade the privacy and security residents are entitled to.

I read that the drones record their flight path so they can use that data to return to their point of origin. So they record private back gardens! And residents' activities! Totally unacceptable.

What about security and safety? A drone can crash, or drop a parcel that may be found by a child or a pet, or be part of a terrorist attack. Again, totally unacceptable risk, and for trivial reasons.

There is much published scholarly evidence that noise pollution causes ill health and disturbs birds and wildlife, and drones will be adding to these issues.


Is this what we want for our "bush capital"? I don't think so.

PLEASE don't add to the stress of noise in suburban and community living by allowing noisy intrusive drone deliveries.

The suburban skies are private at this time, at least at the height and trajectories that drones fly, let's keep it that way for the mental health, well being and amenity of the community and for Canberra's wonderful range of birds and wildlife.

Thank you

Lesley Ellis



Sent from my iPad



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 061

Date Authorised for Publication: 27 February 2019

Your local voice



www.westoncreek.org.au
info@westoncreek.org.au

PO Box 3701
Weston Creek ACT 2611

Telephone (02) 6288 8975

The Secretary,
Standing Committee on Economic Development
and Tourism
Inquiry into Drone Delivery Systems in the ACT
ACT Legislative Assembly
CANBERRA ACT 2601

19 February 2019

LACommitteeEDT@parliament.act.gov.au

**Submission on the Inquiry into the
Drone Delivery System in the ACT**

The Weston Creek Community Council [WCCC] welcomes the opportunity to comment on the inquiry into the Drone delivery system in the ACT. Council has no position on drones given their divisive nature in the community.

Council would like to emphasise the following points.

The Technology:

There is no doubt that drones are part of the new technologies bursting onto the community. It is another technological advance in society. The technology divides communities as we have seen in the first trial in Bonython and also in social use.

Some people have embraced drones and the technology while others are of the view that they should all be banned.

The Law:

There is no doubt that the Civil Aviation Safety Authority [CASA] is playing catch-up with legislation and now Registration of all drones. Council would see a need for minimum flying heights to be included by CASA and if this is not done, then the ACT Government needs to legislate for this matter.

Their Use:

Drones are already being widely used in the community, particularly so for photography. Books have been produced using photographs taken almost exclusively from drones while Real Estate Agents are using them increasingly in taking photographs to use in their advertisements. This is but one commercial

use. Others include Surf Life Saving and we have just seen Icon Water utilising them in their catchment area and no doubt more will unfold over time.

Some thoughts on the Management of Drones in Commercial Activities such as Delivery Systems:

Council would suggest that the following points should be taken into account to manage any trial of drone delivery services.

Base – the base for any drone base needs to be in a Commercial or Industrial area such as the one now being prepared in Mitchell. This will take the base away from residential areas.


Designated Routes – to modify the impact on the community there needs to be designated routes for drones just as there are for trucks and other deliveries in the ACT. Indeed, this is the way that aircraft fly on designated routes and set heights. Council would see a network of green corridors and pathways and roads as being the way that drones find their way to their destination, rather than taking the bird's eye direct route. **Council does not agree that they should be allowed to fly continuously over residential areas.**

Hours of Operation - Just as delivery vehicles have restrictions on road travel, there needs to be consideration given to limiting drones in the times of their delivery. Could it be 5 or 6am to 10 or 11 pm to reduce the noise pollution in residential areas late at night and early in the morning. Just as we see with buses and trucks on our suburban roads.

Minimum Heights – There needs to be a minimum height that these drones travel at for delivery. Council would think around 200 feet would be a reasonable height limit.

Council remains available to discuss this Submission at any time

Tom Anderson
Chair
Weston Creek Community Council

62873845




LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 062

Date Authorised for Publication: 27 February 2019

From: [Skye Blomfield](#)
To: [LA Committee - EDT](#)
Subject: drone inquiry submission
Date: Tuesday, 19 February 2019 4:00:45 PM

As drones are more visible and heard in our world I worry for both my own quality of life and for that of others.

I worry because I believe that our relationship with nature is ever more important as our world becomes more and more complex and faster and faster. Nature provides many of us with refuge, solace and meaning in such a world.

To have our suburbs - where we rest, gather and play with our families and friends - disturbed by a drone delivering consumables is frankly gross, insensitive and totally unnecessary.

I acknowledge that drone technology has a place and can be both efficient and effective in understanding our world and achieving our ideals however disturbing the peace for the sake of a coffee or a pizza does not fit this bill.

I do not understand why Canberra, in particular, would consider and allow the use of this technology in this way. Do we not understand what this city provides that so many others struggle to provide? Canberra has peace and quiet and is surrounded by nature. I only hope the government will protect that important part of our city.

My details are:

Pamela Skye Blomfield





LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 063

Date Authorised for Publication: 27 February 2019

From: [Paul Cliff](#)
To: [LA Committee - EDT](#)
Subject: submission -- Drone Inquiry
Date: Tuesday, 19 February 2019 4:07:35 PM

19 Feb 2019

For consideration of the committee:

I am appalled at the consideration of using drones for service delivery in the inner north of Canberra.

Drones are a tremendous (and inevitable) piece of technology for selective use in many ways, and in the appropriate conditions, ie where they do not impinge on the quality of human life and on wildlife.

Their use at more mundane levels, for commercial service delivery within suburbs, however, is an entirely different matter.

Such use is completely at odds with the environment which the residents cherish here in CANberra, and which the ACT's history values. As part of the Canberra Plan we all benefit from attractive open spaces. At the individual suburban level we are encouraged to have unfenced gardens with native shrubs and trees to attract and support native wildlife, particularly birds, within them. The concept of a commercial company bringing in drones on a widespread basis, flying above people's roofs and yards, entering and disturbing this landscape and airspace is completely abhorrent.

I have been a Labor voter since coming to Canberra 20 years ago. ACT Labor has made some great decisions over that time which have improved this city and territory., particularly in the area of community and environment. I thus find it astounding that the government can seriously be considering approving such legislation.

Personally, this drone issue is a real deal-breaker for me as a voter. I will vote against any party which proposes this unwarranted and destructive expansion of the use of commercial service drones in a suburban area.

Signed: Paul Cliff

[Redacted signature]

[Redacted signature]



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 064

Date Authorised for Publication: 27 February 2019

From: [Rowena Mele](#)
To: [LA Committee - EDT](#)
Subject: Inquiry into drone delivery systems in the ACT
Date: Tuesday, 19 February 2019 4:19:22 PM

Good afternoon to the Standing Committee on Economic Development and Tourism,

I'd like to take the opportunity to express my opinion and experiences with the drones and Project Wing Delivery as I live in Bonython. I became aware of the trial by Project Wing and as a family we were happy to sign up to be part of the trial and very interested at the innovative method of using environmentally friendly drones to deliver our food orders. The regular interaction, engagement and communication provided to us by Wing Delivery was always polite, professional and courteous. However I found that the flyers in my mail by Bonython Against Drones (BAD) to be extreme propaganda and when I emailed them seeking to understand their point of view, I received no reply. This I assumed was because I offered an alternate view and wanted to engage in a positive discussion about the drone trial. When walking my dog around Bonython I was approached by people seeking for me to sign their petition against the drones, however they weren't interested at all in hearing my positive experiences with drone delivery. When I posted a positive comment on the SouthFest Facebook page that promoted Project Wing, I was trolled by people that didn't want to hear about being supportive for this innovative company. I found it quite frustrating that people can be so negative and complain so much about drones, but they aren't at all concerned about the delivery drivers on the roads or being part of an exciting new method of home delivery.

Our family has 2 adults, 2 teenagers, a dog and 3 cats and many of our neighbours all have and a variety of cats and dogs as well as the local bird life, kangaroos, lizards etc and none of the local pets have been upset or appear disturbed by the drones. They travel so high in the air and so quickly you barely even notice they were there until they have passed overhead. The delivery of the food on my driveway lasted around 10 seconds and was no louder than a car or lawn mower. The Wing app was easy to use and putting our order in for the burritos and having them delivered within 10 minutes was very impressive and helped when we were at home working in the yard and not interested in stopping to make lunch or go into Tuggeranong to purchase food. We even had family come visit just so we could order extra burritos from Gusman Y Gomez and have them delivered by drone for the novelty. We didn't consider them to be noisy or disturbing at all and it was very convenient for me to be able to place a food order for delivery to my son when he was at home on school holidays and he didn't need to provide payment to a delivery driver when I wasn't at home. Project Wing took into account the feedback by the community and changed delivery hours, shut down for weeks over Dec/Jan and made the drones quieter which demonstrated their ability to be reasonable, I don't think BAD were reasonable in their biased approach.

Just hoping to balance out the messaging that there were people in Bonython that did appreciate the drone delivery and very much enjoyed the service offered by Project Wing and I would have continued using it had it continued past the trial period. Let's be a community that embraces new technology and environmentally friendly home delivery options.

Thank you

Rowena Mele

[REDACTED]

[REDACTED]

[REDACTED]

I am unaware of any oversight, this part of the trials problem, no clear line of sight to who is responsible for what within the trial. Nor who to go to with issues or problems.

b. Commonwealth agencies such as Air Services Australia, Civil Aviation Safety Authority
There has been no practical support provided by Air Services Australia in resolving issues. If contacted they were less than helpful and failed to provide a clear path to assist in resolving issues

4) The extent of any environmental impact as a result of trialling drone delivery technology on;

a. Residents within the trial area

See response under first point

b. Native wildlife

See response under first point

c. Domestic animals

I don't have domestic animals myself however the howling of dogs within the area was prominent during the flying hours of the drone. This decreased immediately upon cessation of flights at the end of the day.

5) Ways to improve the use of drone delivery technology within the ACT

- Limit drone delivery to essential services, not all services
- Allow Drone delivery only for specified use cases such as those who are unable to leave their residence for medical (proven) reasons. Delivery of pharmaceutical products to these cases.
- Follow arterial roads and diverge across suburbs at multiple point
- Prevent flight paths over residential areas being used more than once a day
- Enforcing a separation for flights of 50m or greater over residencies for each delivery ensuring noise pollution is not concentrated over a few homes
- Halt further rollout until quieter drones are available.
- Lift flight ceiling to 100m to further reduce noise pollution.
- Set a goal of halving noise pollution before further approvals are given to the commercialisation of services.

6) Any other relevant matter

It is hugely disappointing that the government of the day has not actively sort to engage with those constituents who have been immediately impacted by the trial. If the submissions for commencement were clear on business case, success criteria and community consultation then it would have been better to have dealt with community concerns and impacts prior to starting of the trial.

It seems the territories race to be a "smart city" is at the expense of constituents with little to no recourse.

Sincerely



John Reis

preferences for lifestyle. Wing and the ACT Government have made no effort to address through the trial the intrusion into seclusion for any of the residents.

- **Commercialisation of my private space** – the space directly above my property should be a space that is free of commercial invasion. At the very least it should be an opt in or out model. This would provide the clearest indication of support and allow for flight paths to be appropriately plotted. It should also allow any householder to opt out at any stage should they find the invasion too much.
- **Social exclusion** - In a modern world where isolation of people is becoming more and more prevalent, this trial seems to support further isolating the lonely and vulnerable. It is surely better for people to leave their homes and engage in social activities such as going to the shops and interacting with people (no matter how small) rather than allowing them to further shut themselves out. Is it not enough that we have others to provide delivery services such as Uber eats for food, both Woolworths and Coles for shopping and countless delivery services for online purchases.
- I may be in favour of providing a Drone service to those who are elderly or confined to the house for medical reasons. Allowing for delivery of Pharmaceuticals and essential services.
- **Consultation** – to date I have had zero consultation with either Wing or the ACT Government and considering my residence is one of the most impacted in this whole trial I am shocked that no effort has been made to discuss with me the impacts or my views on ways to make the service better and more palatable to the public and residents. The flippancy in which statements are made by both Wing and The ACT Government in public forums belies the real impact and experience of those within the trial area.
- Mr Gentleman has shown no care nor skill in understanding any of the issues raised during the trial nor has there been any adjustments made following feedback.
- **Lack of monitoring** - What monitoring took place during the trial as I am unaware of any monitoring of any sort. This I presume is to zero consideration being given to what does a successful trial look like for all.
- What measurements were taken and what are the criteria to measure the success or failure of the trial, were these set prior to commencement or are we just expecting Wing to advise us how well the trial went, and rubber step the continuation into a commercially viable model without listening nor gathering and implementing lessons learnt.
- **No independent authority to provide feedback** – It was never clear who to contact during the trial in order to provide feedback or seek answers to questions.
- This felt deliberate by both parties as it was impossible to find someone to talk to or assist with issues around the trial, including the very real issue of immediate impacts to individuals lives and mental health and wellbeing.

2) The economic benefit of drone delivery technology being tested in the ACT including;

- a. The investment that has been brought in to the Territory

The investment is self-serving and just fits within the “delivery” sector i.e. it is just another service being provided for delivery. I do not see any clear investment as we do not build drones and there are many methods for delivery that would allow Google to provide goods delivery to residents

- b. The number of jobs that have been created as part of the trial

This is unclear, and would they not have been created regardless of the delivery method?

- c. The extent of collaboration with local industry and academic institutions

3) The extent of regulatory oversight of drone technology at various levels of government including;

- a. Local authorities such as EPA, Worksafe, Access Canberra

I would like to comment on the following terms of reference:

1) The decision to base the trials of the technology in the ACT and surrounding region

I live directly under the flight path of the Bonython trial, I am subjected to the drone passing overhead (directly) twice for every delivery made. As the entry and exit point to the suburb on trial I am well placed to comment on the intrusive and invasive nature of the trial and technology.

My issues with the drone trial are:

- No consultation with those most impacted by the trial, those directly impacted should have been easily identifiable had Wing provided intended flight paths to the Government prior to commencement and alternatives investigated to residential fly overs.
- **NOISE** – It is difficult to explain to those who are NOT constantly exposed to the noise i.e. those that are receiving deliveries would not experience the constant exposure of those who are directly under the suburbs entry and exit point for flights, as I am. This cannot be understated as it was by the Chief Minister as no more than a neighbour mowing their lawn. At most in my time in Canberra I have had no more than 5 neighbours who mowed their lawn irregularly and not daily and all day. This is a flippant line that should be discarded or at the very least tested.
- You cannot accept the statement by Wing that quieter drones are being developed on face value as they don't believe there is an issue with the noise produced by their current model. There is no timeline nor facts/figures on the decibel output to be achieved/targeted by these "new drones"
- Wildlife just disappear not over weeks, not over days, not over hours, it is immediate and noticeable to all that are backing reserves, who have trees in the vicinity of their property or bushes that attract the wildlife. I have large trees and native bushes that whilst the trial was being conducted were not visited or nested in during the duration. Since the cessation of the trial they have returned. I hope that someone had measured the before/during/after impacts on the natural wildlife, if not then this is another failure of the trial boundaries.
- **I don't believe the same flight path should be allowed to be used (within 50 metres each time) twice in a day. This would have the effect of sharing the noise pollution that is currently concentrated over a very small area.**
- **Property Value** – I have owned my property for 8 plus years and feel that if the trial were to go live that being directly under the flight path will directly impact on my property value in a substantial manner as the on-going noise would not be an attractive feature for new home buyers. Unless the government and Wing are prepared to noise proof our homes (provide noise insulation and triple glassing) this however does not address the outside ambience when trying to relax in your own yard of a weekend. It is far from relaxing to have the constant noise pollution provided by the drones.
- **Wellbeing** – it is difficult to state just how "angry" the start up and constant buzz throughout the day makes me. It impacts on me on a daily basis and upsets me beyond that which is normal or acceptable. I feel that my wellbeing was never a consideration in approving the trial nor does it appear to be a consideration in moving forward with commercialising the service. I expect that the impact I have experienced in the time of the trial will only multiply if it were to continue in its current state and flight paths.
- **Outside impacts** – It is impossible to ignore the noise pollution when inside my house little own when I am outside in the garden, entertaining or just living life at my property. The noise is invasive and not conducive to wanting to be outside. Visitors to my property often comment on how they are glad it is me and not them who has the Drone trial as they too find it an appalling noise.
- **Intrusion into seclusion (invasion of privacy)** – the introduction of the drones has directly impacted upon my solitude (property was purchased for its natural bush setting and set back from main roads and at the back of the complex to reduce through traffic), the drone has trampled all of these conscious decisions made by myself for my personal wellbeing and

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	John Reis
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	

Optional:

How long you have lived in the area:	[REDACTED]
Occupation:	[REDACTED]
Any other background information:	

NOTE: Most submissions are made public once they are submitted. If you do not feel comfortable identifying yourself, make it clear in a covering letter that you wish your submission to remain anonymous. Your submission may still be made public but your personal details won't be.

What you can include in your Statements:

Below are some points that you may want to include in your submission -

- Why you are writing to the Inquiry: e.g. you live in the area, you have pets, small children, medical concerns etc.
 - Issues and concerns, e.g. privacy, data collection, safety, pets and wildlife.
 - Any problems, or how the drone deliveries have affected you and your household.
 - The location of your home to the flight path.
 - Examples of the impact it has had on you, e.g. noise, feeling angry or unsafe, animal behaviour, neighbour relationships.
 - Detrimental social impact in the community when many neighbours are now at loggerheads.
 - Selfishness of one person to get a delivery at the expense of so many households.
 - Why you think it is not feasible for drone deliveries in a suburban area eg sensibility of delivery of minor or one off consumables when a large shopping centre is so close.
 - Your feelings on the consultative process by Project Wing and the ACT Government.
 - Lack of regulations and monitoring of the trial.
 - No independent authority to provide feedback.
 - Concern and risks of delivery of chemist items.
 - Suggestions or improvements.
 - General comments.
-



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 066

Date Authorised for Publication: 27 February 2019

From: [David Denham](#)
To: [LA Committee - EDT](#)
Subject: Drones investigation
Date: Tuesday, 19 February 2019 7:04:16 PM

Dear Committee

Drones have a place for obtaining information for land management, for surveillance and for search and rescue, but to have them flown over residential areas as delivery vehicles should not be allowed.

Drones are loud, intrusive and disruptive and should not be used as delivery platforms over residential areas.

The residential areas of the ACT are noisy enough; we should not encourage more noise.

Regards

David Denham

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 067

Date Authorised for Publication: 27 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: Inquiry into drone delivery systems in the ACT

Personal Details: Name: Kevin Ross Cox



To members of the Standing Committee on Economic Development and Tourism,

I object to the introduction of the use of drones for commercial delivery of products into Gunghalin on the following grounds.

1. Within Gunghalin we have many ways to deliver goods without using the Common Airspace that we all share.
2. Air Space is a precious resource that should be used for purposes that give a clear economic benefit to the community. The commercial delivery of goods for private profit is not one of them.
3. The use of Air Space for deliveries will hinder the use of drones for community purposes because it “pollutes” the common air space in a similar way to the use of disposable plastic bags pollutes the common environment.
4. Pollution will lead to law enforcement issues as is illustrated by the recent shooting down of the Evoenergy drone.

The shooting down of the Evoenergy drone illustrates what is likely to happen when a scarce community resource is used for a low-value commercial operation or for private amusement. It is inevitable that drones delivering goods in an urban setting will create low-level guerrilla activity against the drones from rock throwing to hacking the drone communications.

The community will have a further cost of policing a low-value commercial operation and in the meantime, high-value uses such as Evoenergy that save a large amount of money and reduces the use of helicopters in urban areas will become subject to the same harassment and restrictions and become unviable.

There are sensible uses for drones but commercial delivery of packages is not one of them.

In summary, have drone trials but restrict the trials to services that are low volume and have a clear community benefit. For example, ask “Wings” to work on better ways to deploy drones that will assist Evoenergy to inspect power lines. Or ask “Wings” to work on ways to inspect other community resources like footpaths and roads. Or ask “Wings” to work on ways to assist building inspectors to ensure the work that gets covered up has been done correctly.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 068

Date Authorised for Publication: 27 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Inquiry into drone delivery system in the ACT
Date: Tuesday, 19 February 2019 8:19:26 PM

To: The standing committee on Economic Development and Tourism

Name: [REDACTED]
[REDACTED]
[REDACTED]

Please note: I would like my submission to remain anonymous.

I am writing in regard to the drone delivery trial in the ACT. I am in full support of the system and would love to see a permeant program in the ACT.

My experience with the trial was a positive one. I did not find the drones to be any more intrusive than a lawn mower or motorbike. Yes, the sound is a different pitch than we are accustom to in the past, but after a day or two I did not notice it any more. Inside the house I found I didn't hear it at all. I believe that like any new technology, it simply takes time for people to adjust. We cannot let our fear of change prevent something new.

I believe the benefit of this technology to the environment is huge. I do not pretend to be an expert into the technology. However, my understanding is that the environmental impact of something that is electric powered, rather than say something delivered via truck which is fossil fuel powered, is far better for the environment. The drone has the potential to be fully green if they were to charge them using solar power. If the drones were to then start delivering packages other than food (such as small packages bought on the internet), it could help reduce the number of large petrol using trucks that deliver packages daily.

In addition to the environmental impacts, I support this technology because it provided increased accessibility to people who have mobility issues or are otherwise unable to access these products. A service like this that could deliver basic items like milk and bread, would provide better quality of life for anyone who is unable to go to the local shops. Those people would no longer have to rely on someone to go for them, just to retrieve small everyday items (much

like the chemist warehouse items that were being offered in the trial. Eg. Vitamins, sanitary items, first aid items etc.) There are options already available like Woolworths online ordering and delivery, but this is only useful for large shops where you are ordering \$200 plus of groceries (At that cost they do not charge a delivery fee). The drone delivery system would provide people with a way to do smaller shops, receiving the item within minutes of ordering.

The convince of the drone delivery system was by far my favourite part of the trial. I received my items within 5 to 10 minutes of ordering. That is far quicker than it would take me to drive to the shops, buy a coffee, wait for it to be made, and drive home. Plus it uses far less petrol!

I believe the drone system would benefit the local economy. There was a local business that was part of the trial that sold handmade chocolates. I had not previously heard of this business, but I was interested to try them. That is a sale they would have otherwise not had, if not for this drone trial. I then bought their chocolates as gifts for family members birthdays. I chose to do this simply because it was convenient (and after previously trying the product I liked it!). I had left shopping to the last minute and needed a present fast. I received my order in less than 10 minutes. I would not have otherwise used them. My family members then learnt about this business too, again increasing awareness. This process has generated business for them they would not have previously had, and increased the likelihood of me buying from them again.

In conclusion I loved our experience during the trial. It was convenient, I did not find it intrusive, and I believe it is fantastic from an environmental perspective (and has the potential to be even more so). I would like to see this program become permanent.

Kind regards,

A black rectangular box used to redact the signature of the person writing the letter.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 069

Date Authorised for Publication: 27 February 2019

From: [Samantha Saint](#)
To: [LA Committee - EDT](#)
Subject: Drone Delivery feedback - Samantha Saint
Date: Tuesday, 19 February 2019 9:19:57 PM

To whom it may concern,

I would like to share some feedback on my experience with the drone delivery service here in Boynton, ACT.

Over the last few months I have seen a lot of attention in the media given to those who are against the trail and the possible future of a drone delivery home service in the ACT. There has been a lot of negative exposure to the project that I personally feel is completely unwarranted.

I live on the edge of Bonython less than 1km from Project Wing's site. I am exposed to the noise of the aircraft more than most as I am in the direct flight path of both incoming and outgoing deliveries. The noise disturbance in my opinion is extremely minimal and is no different to many neighborhood noises we become accustomed to in suburban living.

The height and speed of the aircraft ensure that the noise is very minimal from the ground. When the aircraft hovers overhead and lowers the parcel the delivery takes approximately 45 seconds. During this time the noise is heightened but again in my opinion, very minimal.

Allow me to use a parcel delivery from a motor vehicle as a comparison.

When my neighbor has a delivery from Australia post the delivery van will pull into her drive way and the local dogs start barking. The driver will beep his horn and if no response he will exit his vehicle and ring the doorbell. No answer? He will then write a slip to place in her letterbox all the while his engine running and the dogs barking. In some cases he is in the driveway for a few minutes.

So to compare, the disturbance of a drone last only seconds yet a motor vehicle disturbance can last much longer.

There are many other neighborhood disturbances. The gentleman at the end of the street who insist on mowing his lawn in the early hours of Sunday morning. Or the P plate hoon who lives on the corner and is always driving recklessly. All have the ability to disturb the community in regards to noise. I truly believe the issue is that the noise is new and different, no better or worse than any other noises we deal with on a daily basis.

I could expand greatly on my experience of the trail. As a mother of two young children juggling shift work and study I used the service regularly. I truly enjoyed my experience with Wing. The service was quick and the ordering process user friendly. The team behind Wing were extremely professional and forthcoming in regards to receiving and implementing feedback from the testers. I can only imagine how this service could benefit the greater community given the opportunity.

If you would like any further feedback on my experience please feel free to contact me via email or on my mobile - [REDACTED]

Kind regards,

Samantha Saint

[REDACTED]

[REDACTED]



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 070

Date Authorised for Publication: 27 February 2019

From: [Terry de Luca](#)
To: LACommitteeEDT@parliament.act.gov.au
Subject: Inquiry into drone delivery systems in the ACT
Date: Wednesday, 20 February 2019 9:53:07 AM

ACT Legislative Assembly
Standing Committee on Economic Development and Tourism

Inquiry into drone delivery systems in the ACT

22 February 2019

Dear Committee,

I am opposed to drone deliveries in the North Canberra area and/or any trials associated with the experiment. My reasons are:

It will affect employment opportunities for deliverers. We need to give people opportunities for employment especially youths and young adults, not take them away.

Noise pollution is invasive and unwanted. The whirring of the propellers is quite impactful.

Animal welfare especially sensitive dogs when they hear the noise. This not only affects the animal but also neighbours.

Danger to the community when they hit powerlines, trees and CB radio antennas (and other antenna devices), birds and possibly humans when visibility is limited.

Unproven safety testing. This should have been carried out in non-residential areas before considering trials. Anything below 100% safety is unacceptable.

Privacy. Drones use camera devices and I do not want my privacy invaded and possibly recorded.

Drones provide unwanted data to corporations for marketing purposes.

The only use I would allow is emergency medical supplies such a medi-pens for anaphylactic shock victims or if a doctor/nurse/ambulance officer is with a patient and needs emergency medical supplies.

Yours sincerely,

Terry de Luca

A solid black rectangular box used to redact the signature of Terry de Luca.

Wednesday 20th February. 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 071

Date Authorised for Publication: 27 February 2019

From: [Margaret Meekin](#)
To: [LA Committee - EDT](#)
Subject: Drones
Date: Wednesday, 20 February 2019 2:45:56 PM

Good afternoon, I am against the use of drones in residential areas for the following reasons. I am not against them for the use of tracking bush fires/animals or delivering medicine to remote locations. My reasons are:

- a. Noise
- b. Wildlife
- c. Privacy.

a. For more than 6 months we had a drone deliver of coffee/burrito's from 8.30 in the morning 5 days a week to a neighbour. The screaming noise as the drone hovered while delivering the goods was terrible. One morning in December I counted 10 deliveries between 8.30 and 8.45 to either my neighbour or to houses just up the street. We had no consultation from Wings prior to the commencement of drone deliveries.

b. Every afternoon we would have dozens of birds on the wires at the back of my property. Since the drones all birds have disappeared. The only birds around where a couple of currawongs who would try and take on the drone which was terrible to watch. I have a rescue dog who will not go outside whenever the drones are around.


c. I would like to know what happens to the film on the drone. What I do in my backyard is my business and should not be captured on film from a flying lawn mover.

One Saturday morning I was so cranky I drove down to the site at Greenway, took photos, made rude signs and for 5 minutes pressed my horn to show how it felt to have a continual annoying noise. 2 weeks later I was visited by the police, advised to do things the legal way or I could be issued with an AVO. What about my rights. I joined Bonython Against Drones and will continue to fight against the stupid delivery of coffee when many shops are 3 minutes drive away.

The ACT Government never approached any neighbours or advised us the drone trial was taking place last year. Thank you for listening to my issues.

My details are:

Margaret Sinfield/Meekin





LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 072

Date Authorised for Publication: 27 February 2019

From: [Jean Willoughby](#)
To: [LA Committee - EDT](#)
Subject: Fwd: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT
Date: Wednesday, 20 February 2019 3:07:20 PM

To Members of the Standing Committee


The Drone trial operating at Bonython has had detrimental effects on the health and wellbeing of the greater percentage of the population there. Operators and users of the drone delivery system take no account of the intrusion into personal space of non-users of the system. The trial has been imposed on Bonython residents who had very little warning or opportunity to voice their opposition to the trial.

It is an outrageous assumption by the government that for the sake of a small questionable economic benefit to the community - albeit a potentially large economic benefit to suppliers and operators of the equipment - residents of Bonython, as well as residents in other areas of the ACT, would accept the expansion of drone deliveries .

I recognise that drones may fulfil a sometimes critical role in the delivery of emergency supplies to people in remote areas and in cases where people are cut off due, for example, to floods and other disasters. Such services should be strictly governed by legislation and operated by a government agency or the armed services. Also aware that drones are currently used world-wide for various surveillance operations.
Also aware that in the United States drones are not permitted within specified distances of private residences.

Gimmicks are for small-minded people !!

Jean Willoughby





LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 73

Date Authorised for Publication: 27 February 2019



Mitchell Traders Association

Finditinmitchell.com.au

Info@finditinmitchell.com.au

PO Box 440, Mitchell ACT 2911

Standing Committee on Economic Development and Tourism

ACT Legislative Assembly

London Circuit, Canberra ACT 2601

LACommitteeEDT@parliament.act.gov.au

Inquiry into Drone Delivery Systems in the ACT

Dear Committee,

The Mitchell Traders Association (MTA) welcomes the opportunity to provide a submission to the ACT Legislative Assembly's inquiry into drone delivery systems in the territory.

The MTA supports the use of commercial drone delivery in Canberra. Traders in the Mitchell precinct are openminded towards new technology and understand the transformative impact that drones will have in the future. We believe drone-based deliveries will be beneficial to local ACT businesses and consumers who wish to use the service.

The traders are cognisant of sections within our Canberra community are opposed to the use of delivery drones for a number of ostensible reasons (e.g. noise pollution, privacy issue, environmental impact) that have been highly publicised by the media. We hope that these community concerns are adequately addressed and resolved with the inquiry. However, we request the committee to approach this matter in an impartial manner.

The MTA would welcome the introduction of transparent regulatory provisions to govern current and future use of the territory's airspace. We believe such laws would enable drone delivery services to operate, whilst at the same time provide protection to residents and wildlife from undesired intrusion and harm.

Yours sincerely,

Julian Kusa

Secretary, Mitchell Traders Association

20 February, 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 074

Date Authorised for Publication: 27 February 2019

Dr Murray May – submission to the ACT Legislative Assembly Standing Committee on Economic Development and Tourism: Inquiry into drone delivery systems in the ACT

20 February 2019

Dear Committee Members

I have structured my submission using the following main headings as these intentionally cut across the terms of reference in order to provide another perspective for the committee to consider.

1. The standing committee's frame of reference
2. Two scenarios
3. Invasive noise
4. Quality of life, well-being, and public health
5. Project Wing's marketing and unpacking the drone debate
6. Conclusion

There is also a reference list at the end.

I have also forwarded two separate attachment documents with my submission for the committee's consideration, namely:

1. Institute for Technology Assessment of the Austrian Academy for Sciences (2018). Delivery drones from a technology assessment perspective. While not necessarily agreeing with all of it, nevertheless this document provides a useful overview of the many still to be answered questions on drones and their place in societies.
2. Public Health Association of Australia (2017). Policy-at-a-glance - environmental noise policy. I have included this as a short useful summary, as some ACT politicians appear to be unfamiliar with the public health aspects of environmental noise.

1. The standing committee's frame of reference

I note from the ACT Legislative Assembly website that the Standing Committee's role is defined as follows:

A Standing Committee on Economic Development and Tourism to examine matters relating to economic and business development, small business, tourism, [market and regulatory reform, public sector management, taxation and revenue], procurement, regional development, international trade, skills development and employment creation, and technology, arts and culture.

On 26 October 2017 the Legislative Assembly resolved to amend:

Omit the words "market and regulatory reform, public sector management, taxation and revenue", substitute "Access Canberra".

The committee's frame of reference by definition is biased towards economic issues and could well mean that a limited lens is used to examine this issue, rather than a holistic approach. Implicit in the term of reference (b) "the economic impact of drone delivery being tested in the ACT" is that introduction of drone delivery systems in the ACT will inevitably be desirable. This bias is also apparent in the assumption of the inquiry term of reference (e) "ways to improve the use of drone delivery technology within the ACT". One hopes "improve" here includes limiting the scope of drone delivery technology in the ACT, rather than just assuming that drone delivery systems are a foregone conclusion. For example, a recent email from Mick Gentleman states that [Project Wing] "have been trialling their new business model in the ACT over the last two years, and the ACT government welcomes this business investment in Canberra". It's true that term of reference (d) addresses "the extent of any environmental impact", though if the committee were a standing one on "quality of life and community health", its overriding concerns and priorities would be quite different..

2. Two scenarios

Attached for the committee's consideration is a 2018 report "**Delivery drones from a technology assessment perspective**" by the Institute for Technology Assessment (ITA) of the Austrian Academy of Sciences" (Institute for Technology Assessment of the Austrian Academy for Sciences, 2018). Of particular value is the report's consideration (p.37) of two scenarios for drone deployment:

The **basic scenario no. 1 (the so-called "pizza scenario")** is the widespread delivery of all kinds of small goods (parcels) by drones, instead of (or in combination with) delivery vans and trucks. The AlphaBeta consultancy for Project Wing estimated that by 2030 there would be 5.6 million drone deliveries a year or 11,000 drone deliveries a day (Evans, 2018).

The **alternative scenario no. 2 (the so-called "emergency scenario")** is less extensive: the delivery service by drones would only be a niche market, in which special goods, e.g. in the medical field, would be routinely transported between hospitals, pharmacies, and practitioners, or for other emergency purposes. Another potential niche market could be the regular supply of goods to remote areas, where no roads lead or there is no other connection.

Most of the impacts are much aggravated in the case of scenario no. 1 as it is associated with ubiquitous and massive drone flights, whereas in scenario no. 2 flights take place less frequently, perhaps only occasionally. Those with significant concerns about scenario 1 usually support the wide range of other less invasive uses for drones in scenario 2 such as for mapping and surveying, emergencies, insurance industry use after floods, environmental protection, inspection of power lines in Canberra by Evoenergy and so on. For example, Canberra MP Gai Brodtmann readily recognises the benefits of drones in rural and remote

Australia, in contrast with the widespread concern by residents in her electorate about the delivery trial in Bonython (Jervis-Bardy, 2018e).

More often than not, proponents of expanded drone delivery such as the ACT government and Project Wing mix up the two scenarios rather than recognising the many pitfalls from a community point of view of scenario 1. In scenario 1, considerable numbers of drones filling the lower airspace bring the noise pollution normally associated with heavily trafficked roads or worse, or with living near airports, with likely negative impacts on real estate values in those areas. The aesthetic appearance of drones swarming the lower airspace can also be expected to be met with resistance from the population.

Flowing from the above is the conclusion that just because we can do something it doesn't necessarily mean we should. As an editorial in the Canberra Times put it: "what if the residents of Gungahlin decide ... they'd rather not deal with the noise and lack of privacy that Bonython residents have complained of? What if it's decided that Canberra, as an already liveable and progressive city, has no real need for drones to deliver things at all?" (Editorial, 2018b)

There are a **host of open questions** regarding the commercial use of drones covering technical, legislative, societal aspects, safety and environmental risks. The trial in Bonython demonstrates that it was approved and implemented in the absence of sufficient foresight being given to these issues. For example, there is no agency responsible for the very significant noise issue arising from commercial drone use. The Civil Aviation Safety Authority (CASA) states that both noise and privacy are not its remit, as it is only the safety regulator. Airservices Australia has a role in managing aircraft noise in Australia, but states there are no federal noise regulations applying to drones. The ACT Environment Protection Authority (EPA) has a role in managing community noise e.g. air conditioner noise from a neighbour, but has no role in relation to noise from drones. This is completely unsatisfactory. The ACT government claims that "Wing would need to meet all the necessary legal and regulatory requirements of the territory and/or Commonwealth" (Jervis-Bardy, 2018b) but forgets to mention that governance arrangements for drones are deficient or absent altogether.

3. Invasive noise

Invasive noise is top of the list of concerns for residents of Bonython which has been subject to the delivery drone "trial" in recent months. The noise level has been recorded at the 80 dB level, which is well above the community noise standards applicable in Canberra. In residential areas, the standards are 45 dB(A) during the day and 35 dB(A) overnight. This applies for example to air conditioner noise from a neighbouring property. In the ACT government flyer on these standards, the daytime levels in a quiet residential suburb are listed as being typically 35-45 dB(A) whereas a lawn mower 15 metres away is listed as 70 dB(A) (ACT Government, 2015).

Some activities such as garden maintenance and regarded as acceptable to the community make noise above the permitted standards in prescribed timeframes. However, the tenor of the document is on noise reduction wherever possible. With excessive noise, people are

encouraged to discuss the issue with the person causing the noise or alternatively initiating mediation via the Conflict Resolution Service. When purchasing and installing reverse cycle air conditioners, heat pumps, pool pumps etc. people are advised to consider the location in relation to neighbours. Such advice makes sense, given that almost 80 per cent of all complaints made to the ACT Environment Protection Authority in 2017-18 are about excessive noise (Brown, 2018).

Although a comparison of drone noise with lawn mowers has been made by Chief Minister Andrew Barr, such an analogy is flawed and shows a lack of understanding of the ACT government's own advice on noise in residential areas. The trial in Bonython was approved by CASA for the following timeframes:

- Monday to Saturday from 7 am to 8 pm
- Sunday from 8 am to 8 pm.

Is Andrew Barr suggesting it is acceptable to have 20 to 40 overflights of drones each and every day of the week, at sound levels equivalent to or greater than a lawn mower? It should be remembered that the decibel scale is a logarithmic one, meaning that every 10 dB increase is a doubling of perceived loudness. Further, loudness is only part of the problem, with the high pitched frequency of drone noise producing annoyance responses greater than those associated with regular road vehicles. A NASA study on this issue concluded that this result "casts doubt on the idea that [drone] operators can expect their operations to be greeted with minimal noise-based opposition as long as the sound of their systems are 'no louder than' conventional package delivery solutions" (Christian & Cabell, 2017). With scenario 1 discussed above, is Andrew Barr then suggesting it is acceptable to have the equivalent of multiple high pitched lawn mowers overflying suburbs each day of the week, affecting many people and not just a few neighbours as is the case with a mower, the latter perhaps once a fortnight? The additive effects of multiple drones only increase noise levels still further.

The threats posed to wildlife and birds in particular are discussed in the ITA document attached (Institute for Technology Assessment of the Austrian Academy for Sciences, 2018, p. p. 38). Noise and the frequent presence of drones can be a stress for them, and this has been borne out in Bonython by the "on the ground" observations of missing birdlife and dogs barking constantly, the latter acting as a further noise irritant in the suburb. Residents from other suburbs have expressed concerns about the disturbance of birds and impacts on patterns of feeding, nesting and breeding and argue that they should not be disturbed or driven away by unnecessary technological intrusion for narrow commercial advantage (Blount, 2018). Urgent action has been called for on the loss of 3,000 trees a year in Canberra, with the Canberra Ornithologists Group informing another ACT assembly inquiry on nature in the city that the loss of large numbers of trees is leading to a decline in endangered and common bird species (Burgess, 2019b). The massive drone invasion scenario 1 would certainly exacerbate the threat to birdlife in Canberra generally.

Given the above, it is little surprise that 80 per cent of hundreds of Bonython residents canvassed about Project Wing's trial in the suburb were not in favour of commercial drone use in residential areas (McIntyre, 2018). As is often the case with developers such as

Project Wing, they have attempted to portray objections to their commercial plans as coming from just a small group of residents. In contrast, the reality is that Bonython residents in late 2018 delivered a petition with more than 1,000 signatures to the ACT Legislative Assembly, calling for a block on future household drone delivery services in the capital, including Wing's planned operation in Canberra's northern suburbs (Jervis-Bardy, 2018a). As at 18 February 2019, the Bonython against Drones Facebook group has 228 members.

Other sources of community feedback summarised by Gai Brodtmann MP, Member for Canberra (Brodtmann, 2019) include:

- In December 2018, the Canberra Times published a poll canvassing a broader range of people than Bonython residents. The result was 68 per cent against drones, 17 per cent for and 15 percent unsure.
- The RiotAct's online poll on the delivery drone services showed 66 per cent of respondents saying "Keep them out of my backyard".
- ABC Radio's poll on 13 February 2019 with 793 participants found 65 per cent were against the drone delivery trial, or the service in general.

4. Quality of life, well-being, and public health

There is a very large literature on quality of life and well-being which challenges that notion that all that matters in life is economic growth and material well-being, including popular books such as Clive Hamilton's *Growth Fetish* (Hamilton, 2003). This has even been expressed of late in the ACT government's intention to introduce a well-being index – this seeks to go beyond economic and population data to measure progress via such an index (Burgess, 2019a). It also expressed through the idea of "liveability" of a city.

ANU human ecologist Emeritus Professor Stephen Boyden AM has long considered such issues and encourages planning for biosensitive cities that address human health needs and also the health needs of ecosystems (Boyden, 2010, p. 45). Quality of life or lack of it is strongly associated with mental health issues and stress related challenges, with mental health compromised in response to unsatisfactory physical and psychosocial conditions. Boyden addresses a range of physical and psychosocial factors that are important for human health. The physical ones include, for example, clean air, clean water, healthy (natural) diet, protection from extremes of weather, and *noise levels within the natural range*. The psychosocial factors include, for example, emotional support networks, recreational activities, sense of purpose and belonging, sense of security etc.

With respect to noise and legal requirements, the residential tenancy legislation of every state and territory enshrines the right of tenants to quiet enjoyment. In most jurisdictions, the legislation expands the right to quiet enjoyment so it also includes the right to reasonable peace, comfort and privacy (Victorian Law Reform Commission). These rights are akin to the basic health needs considered above in human ecology terms.

Contrast the above with an opinion piece on the invasion of all manner of noisy technology into public spaces. The author states that the more time she spends outdoors, the more it feels like she is being besieged by noise intrusion in ways that were previously unimaginable. She continues: “Since when was it socially acceptable to blast out nightclub anthems at the beach? Or fly a noisy drone with its incessant, high-pitched buzzing through the tranquil canopy of a national park? Just because you got state-of-the-art Bluetooth speakers for Christmas doesn’t mean you have a free pass to play music at full bore” (Stark, 2019).

Noise pollution is already recognised by health authorities as of considerable public health significance, with a World Health Organization publication *Burden of disease from environmental noise: quantification of health life years lost in Europe* drawing together much relevant information (World Health Organization, 2011). While Project Wing uses consultancy firms such as AlphaBeta to argue for large economic benefits for ACT businesses (Jervis-Bardy, 2018c), the economic framework used is very narrow and commercially focused, and ignores the considerable adverse health effects and costs outlined in the WHO report for example.

As a short summary of the above issues, I **attach** to my submission a 2017 policy overview on environmental noise from the Public Health Association of Australia (Public Health Association of Australia, 2017). Particularly salient points include:

- Environmental noise is public health issue that requires serious attention.
- Common noise sources vary in sound level, and sound can also be characterised by frequency (pitch).
- The repetitive nature of a particular noise and/or the inability of an individual to control it can cause annoyance and stress.
- Environmental noise pollution relates to ambient sound beyond comfort levels. When background levels are low as in a suburb such as Bonython, the experienced noise pollution is more prominent.
- Vulnerable groups such as children, older persons, people with mental health issues, people who are unwell may be affected in more marked ways.
- Long-term environmental noise exposure can affect stress levels, and increase the risk of hypertension and elevate risks of heart attacks.
- Categorising noise with respect to sound level, pitch, how often etc, is important in assessing impact.
- Action to ensure a safe and healthy environment is a critical public health priority.
- Authorities need to make use of “strategic noise maps” and undertake strategic noise impact assessment.
- Governments need to develop policies and strategies to promote public health and reduce adverse environmental consequences from environmental noise pollution.

My own background work and experience on aircraft noise issues suggests that experts in the field of psychoacoustics should be drawn on to a much greater extent in order to better understand the impacts of noise on health.

The Bonython against Drones community group on its website (<https://bonythonagainstdrones.com/about-us/>) states that “the peaceful amenity of our homes is the foundation of our lives, and paramount to our health and wellbeing”. As reflected in many letters and comments to the Canberra Times, RiotACT etc. and the many representations to local politicians such as Gai Brodtmann MP Member for Canberra, this peaceful amenity has been seriously disturbed by the Project Wing drone trial in Bonython. The public health literature on the impacts of environmental noise underlines the significance of the negative impacts observed in Bonython.

5. Project Wing’s marketing and unpacking the drone debate

Project Wing’s marketing has repeatedly promoted particular themes suggesting that the adoption of commercial drone delivery is “forward thinking” and “progressive”. Thus Wing chief executive James Ryan Burgess states that “We decided to invest in Canberra because it’s a growing innovative city and Canberrans have a reputation as early adopters of new technology” (Editorial, 2018b). The economic benefits are described in “gold rush” terms, with the AlphaBeta consultancy report claiming that “projections rely on the premise that deliveries by air are more time and cost effective than deliveries by road, making customers more likely to indulge in ‘additional or higher-value purchases’ “ (Jervis-Bardy, 2018c). Naturally drone technology is promoted as being “environmentally friendly” by reducing greenhouse gas emissions. A more critical review suggests that much of this is marketing hype to support the company’s commercial objectives.

The introduction of new technology often has many unforeseen consequences. For example, while smartphones are now ubiquitous, distraction from smartphone use while driving is now common and a significant factor in road traffic crashes, resulting in deaths and serious injuries.

With respect to consumer behaviour, drone delivery has the potential via its quick delivery aspect to create an induced consumer need with a new environment based on the promise of fulfilment of wishes and instant gratification in a very short time. This could easily fuel binge buying and increase levels of consumer indebtedness. Further increasing the online shopping trend could change the landscape of shopping outlets considerably with many non-virtual shops going out of business (Institute for Technology Assessment of the Austrian Academy for Sciences, 2018, p. 42).

The transport and logistic sector is personnel-intensive, and the labour market for drivers of delivery vehicles would very likely be under threat in an expanded drone delivery scenario. This group of relatively lowly skilled workers could easily be a casualty of commercial drone delivery (Institute for Technology Assessment of the Austrian Academy for Sciences, 2018, p. 39).

In respect to energy consumption and greenhouse gas emissions, drones need electricity and although each individual flight would not consume much, the overall picture of a generalised drone delivery system may be different, in particular if compared with current deliveries with vehicles carrying many parcels at once. Recent research concludes that for parcels up to 0.5 kg the energy balance is in favour of drones. Heavier packages were found

to be best suited for efficient, often electric, ground delivery vehicles (Samaras & Stolaroff, 2018). The overall assessment may be different if the whole infrastructure is put in perspective. Overall, a life-cycle assessment is warranted, including among other factors the life cycle of the batteries needed (Institute for Technology Assessment of the Austrian Academy for Sciences, 2018, p. 38). Moreover, the environmental lens in the Samaras & Stolaroff research is constrained, in that the impacts of delivery drones on wildlife including birds are not considered, nor the impacts of environmental noise on people, other than the throwaway line at the end of their piece: “Now we just have to do something about the noise of all those propellers overhead”. This is always a disadvantage of studies that are not holistic, with the recommendations arising limited by the narrow evaluation framework used.

Project Wing responds to the community angst about noise in various ways. On the one hand it suggests that “it is a new sound that may at first be unfamiliar to people” (Editorial, 2018a), and on the other it says “the company is developing a quieter, ‘more pleasant’ aircraft model ahead of its Mitchell launch” (Jervis-Bardy, 2018d). Just because a sound is new is not a reason that people should have to adapt to it. And as with improvements in aircraft noise, there are limits on improvements to drone noise as the airflow around many rotors cannot be avoided.

Comparative work on the greenhouse advantages of ground based electric vehicles needs to be considered. Australia Post estimates the volume of parcels has grown 10 per cent per year for the past three years and is rolling out new electronic delivery vehicles (eDVs) with more sun protection and carrying capacity (Burt & Mackay, 2019). Along with the new e-trikes, Australia Post has also ordered a new fleet of 4,000 electric pushbikes. Both electric vehicles will be much quieter than the traditional postie motorbikes. There are health and safety advantages for the posties and also the community being delivered to.

Though I have not addressed the issue of regulation much, there are clearly many unaddressed issues. In a dense population area, collisions of drones with people are possible and injuries are quite likely. Though the Civil Aviation Safety Authority created an exemption to its usual distance requirements to allow drone deliveries in Bonython, there still remain concerns about safety. What happens if a recreational drone collides with a commercial drone for example, bring the commercial drone down on a person? CASA’s highest priority is no doubt collision with an aircraft, but misuse of recreational drones has received prominence of late including the grounding of firefighting aircraft.

6. Conclusion

The Bonython delivery drone trial was completely at odds with the normally accepted standards for community noise, and even with what is normally accepted as outside those standards such as use of lawn mowers which don’t continue week after week every day. Such a trial was truly a “trial”, riding roughshod over community rights to the quiet enjoyment of one’s home, and I am surprised it was ever approved. Countenancing exposure of further suburbs in Gungahlin to this onslaught is even more surprising given the strength of feedback from the Bonython community, not to mention the negative feedback from the broader Canberra community.

The approach largely taken by the ACT Government and Chief Minister to date shows little understanding, if any, of the important public health implications of environmental noise (as outlined above) or of fields such as soundscape ecology (Pijanowski, Farina, Gage, Dumyahn, & Krause, 2011). This is the study of sound in landscapes in order to understand how sound from various sources can be used to understand coupled natural-human dynamics. Soundscapes provide ecosystem services to humans in the form of many life-fulfilling functions. Many soundscapes also have cultural, historical, recreational, aesthetic, and therapeutic values. Unique and natural soundscapes can be subtle or powerful links for humans to their environment. In light of the multitude of threats, unique and natural soundscapes have been referred to as an endangered resource. This has been shown in no small way by the strong reaction from many residents of Bonython.

Many, including a good few people in Bonython, are open to the selective use of drones for environmental and monitoring purposes as outlined in scenario 2 above, the so-called “emergency scenario”. Evoenergy’s use of small drones for yearly monitoring of power lines is a good example.

The widespread delivery scenario 1, the so-called “pizza scenario” is another matter altogether, and should be avoided in my view because of its broad environmental impacts on humans and wildlife. People in Canberra appreciate the city’s quality of life and don’t want it further degraded. A permanent installation of a scenario 1 scheme would only depress real estate values in the exposed suburbs. Australia Post’s model of quiet delivery e-trikes and electric bicycles ticks the right boxes. The birds will be around, the greenhouse emission argument holds, and the peaceful amenity of people’s homes and suburbs is preserved.

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Public Health Association of Australia: Policy-at-a-glance – Environmental Noise Policy

Key message: PHAA will –

1. Advocate for environmental noise to be regarded as a public health issue.
2. Advocate for clear standards for prevention and management of noise.
3. Advocate for development and implementation of policies and strategies to promote health by reducing adverse environmental consequences from noise pollution.
4. Advocate for measures to raise community awareness of and commitment to implementing the necessary policy, structural and behavioural changes for addressing adverse environmental noise.

Summary: Environmental noise is a public health issue that requires serious attention to limit its adverse effects as urbanisation increases. This policy describes environmental noise pollution and proposes action for PHAA to take.

Audience: Federal, State and Territory Governments.

Responsibility: PHAA's Ecology and Environment Special Interest Group (SIG).

Date policy adopted: October 2017

Contacts: Peter Tait & Lea Merone, Co-Convenors, Ecology and Environment SIG

Environmental Noise Policy Statement

Refer also to the [PHAA Health Effects of Wind Turbines Policy Statement](#)

The Public Health Association of Australia notes that:

1. Environmental noise is increasingly being recognised as a public health issue.¹⁻³
2. Sound is created when a vibrating source causes energy to travel through the air as pressure waves. The waves may be reflected or scattered by objects so that the sound reaching the ear may be different from the sound originally generated. The sound pressure level is measured in decibels (dB).
3. Common noise sources vary in sound level, for instance, normal conversation (60dB), lawnmower (90dB), chainsaw (100dB), rock drilling (120dB) and jet engine at 30 metres (140dB).⁴
4. Sound can also be characterised by their frequency (pitch). Frequency is measured in hertz (Hz), which gives the number of cycles that occur per second.
5. Noise is a sound that is loud, disturbing or unpleasant – in effect, unwanted sound.
6. People have varying levels of tolerance to noise. In some situations noise may not be particularly loud, but may be distracting. Moreover, the repetitive nature of a particular noise and/or the inability of an individual to control it can cause annoyance. Examples include dogs barking and bass amplification of recreational music.
7. Vulnerable groups, such as children, older persons, people with mental health issues, may be affected by noise in different ways compared to other members of the population.²
8. Environmental noise pollution relates to ambient sound beyond comfort levels. Numerous sources including traffic, construction, aviation, industrial, as well as some recreational activities exist.^{5, 6}
9. Deleterious effects of noise can include hearing loss,⁷ sensory effects such as pain, annoyance⁶ and sleep disturbance.^{8, 9}
10. Environmental sleep disorder is due to an environmental factor that causes either insomnia or daytime fatigue and drowsiness. Other effects include impairment of concentration, attention and cognitive performance, depression and irritability.¹⁰
11. The relationship between sleep and health is generally well accepted. Insufficient sleep can affect endocrine and metabolic function¹¹ or trigger inflammation, which may contribute to cardiovascular events. CRP (an inflammatory marker) levels have been found to linearly increase with sleep loss.¹²
12. Long-term environmental noise exposure can affect stress levels,¹³ and may increase the risk of hypertension (aircraft and road traffic noise) and elevated risks of heart attacks (road traffic noise).^{14, 15}

13. Categorising noise with respect to sound level, pitch and intensity, and correct exposure is important in assessing impact.
14. The World Health Organization (WHO) published the Night Noise Guidelines for Europe. The Guidelines presented evidence of the health effects of night time noise and recommended threshold values to protect health. An annual average night exposure not exceeding 40 decibel (dB) outdoors has been recommended.¹⁰

The Public Health Association of Australia affirms the following principles:

15. Action to ensure a safe and healthy environment is a critical public health priority.
16. When society wide change is necessary for the common good, government's role is to lead, inform, regulate, monitor and enforce, and to motivate behaviour change by individuals and corporations.
17. Producers of pollution, including noise pollution, should pay the costs of remediation.

The Public Health Association of Australia believes that the following steps should be undertaken:

18. Competent authorities including government and relevant experts should work together to clearly define parameters for noise level, exposure assessment, and measures for assessing the health effects of noise.
19. Competent authorities should draw up "strategic noise maps" for existing major transport routes and other developments, using harmonised noise indicators L_{den} (day-evening-night equivalent level) and L_{night} (night equivalent level) as recommended in the EU policy.⁵
20. Proposed developments such as roads, rail lines, airports, mining, and industry should be required to undertake a strategic noise impact assessment before commencement of the development, and ensure noise minimisation design and engineering is included in development proposals.
21. Local noise issues should be identified through consultation with the public and local organisations. A policy to maintain acceptable amenity in terms of environmental noise should be developed and implemented at a local Council level. Strategies to reduce unacceptable noise should also be developed in consultation with residents and implemented at a local level.
22. A burden of disease relevant to environmental noise pollution should be established within constraints of current scientific knowledge.
23. A public health strategy should be investigated to reduce the number of people currently adversely impacted by environmental noise.

24. Innovative strategies for noise reduction in existing buildings and in development of new building materials should be explored.

The Public Health Association of Australia resolves to undertake the following actions:

25. Advocate for development and implementation by government of policies and strategies to both promote health and reduce adverse environmental consequences from noise pollution.
26. Advocate for measures designed to raise community awareness of and commitment to implementing the necessary policy, structural, political and behavioural changes for addressing adverse environmental noise.
27. Work with other organisations/agencies at the national, jurisdictional and local level to support these actions.

ADOPTED INSERT YEAR, REVISED AND RE-ENDORSED IN 2017

First adopted at the 2014 Annual General Meeting of the Public Health Association of Australia. The latest revision has been undertaken as part of the 2017 policy review process.

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Delivery drones from a technology assessment perspective

Overview report

Project Report No.: 2018-01 | ISSN: 1819-1320 | ISSN-Online: 1818-6556

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Delivery drones from a technology assessment perspective

Overview report

Institute for Technology Assessment
of the Austrian Academy of Sciences

Authors: Michael Nentwich [project leader]
Delila M. Horváth

Vienna, March 2018

MASTHEAD

Owner:
Austrian Academy of Sciences
Legal person under public law (BGBl 569/1921 idF BGBl I 130/2003)
Dr. Ignaz Seipel-Platz 2, A-1010 Vienna

Editor:
Institute of Technology Assessment (ITA)
Apostelgasse 23, A-1030 Vienna
www.oeaw.ac.at/ita

The ITA Project Reports are published irregularly and publish the research results of the Institute of Technology Assessment. The Reports are published in print in small numbers only and are made available to the public via the Internet portal "epub.oeaw":
epub.oeaw.ac.at/ita/ita-projektberichte

ITA Project Report No.: 2018-01
ISSN: 1819-1320
ISSN-online: 1818-6556
epub.oeaw.ac.at/ita/ita-projektberichte/2018-01.pdf

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Zusammenfassung

War das Thema Drohnen vor Jahren noch vom Militär dominiert, ist es längst im zivilen Bereich und im Alltag angekommen. Hunderttausende Spielzeugdrohnen sind weltweit im Einsatz und wir haben uns an atemberaubende Filmaufnahmen aus bisher ungeahnten Perspektiven gewöhnt. Immer öfter begegnen uns auch Überwachungsdrohnen, viele haben schon einen Videoclip eines „Drohnen-Balletts“ gesehen oder beobachtet, wie sich eine Touristin mit einem „fliegenden Selfie-Stick“ filmt. In vielen Bereichen werden Pilotversuche durchgeführt, um den Nutzen von Drohnen zu testen, etwa in der Landwirtschaft, im humanitären und medizinischen Bereich, bei der Überprüfung von Anlagen, im Vermessungswesen und nicht zuletzt in der Forschung, um nur ein paar Beispiele zu nennen. Schließlich lassen die großen Online-Händler, einige Postunternehmen und zahlreiche Startups weltweit vor unserem geistigen Auge eine Welt entstehen, in der Lieferungen des täglichen Bedarfs durch die Lüfte erfolgen werden.

Insbesondere die Vision eines drohnenbasierten Lieferverkehrs ist freilich nicht voraussetzungslos. Viele regulative und technische Hürden werden noch genommen werden müssen, um sie Wirklichkeit werden zu lassen. Aufgrund der großen Eingriffstiefe dieser Technologieentwicklung – immerhin würde sich der uns umgebende Luftraum, der bislang nur von Vögeln und gelegentlichen Hubschraubern benutzt wird, gravierend ändern – stellen sich freilich eine Reihe von typischen Fragen der Technikfolgenabschätzung (TA): Bestehen Sicherheitsbedenken? Gibt es Umweltrisiken? Kann die Technologie für kriminelle oder terroristische Zwecke missbraucht werden? Besteht ein gesellschaftliches Konfliktpotenzial angesichts unterschiedlicher Interessen? Reicht die aktuelle Regulierung aus oder müssen neue Regeln geschaffen werden?

Diese Überblicksstudie stellt das Thema in groben Zügen dar und gibt erste Antworten auf die genannten Fragen. Sie basiert im Wesentlichen auf einer ausführlichen Internet- und Literaturrecherche, einigen ExpertInnen-Interviews sowie auf analytischen Überlegungen.

Die wesentlichen Ergebnisse lassen sich so zusammenfassen:

- Es gibt zahlreiche Anwendungsgebiete für zivile Drohnen: vom Einsatz in Katastrophengebieten, in der Landwirtschaft und in der Forschung über die Filmindustrie, den Tourismussektor und den Journalismus bis zur privaten Überwachung, Unterstützung von Wartungsarbeiten und der Kartographie.
- Ein von bereits vielen Akteuren als vielversprechend erkanntes Gebiet ist die Logistik, konkret der Transport von kleineren Gütern zu den EndkundInnen.

*drohnenbasierter
Lieferverkehr ist
voraussetzungsvoll,
es stellt sich eine Reihe
von Fragen, die noch
nicht beantwortet sind*

*Überblicksstudie gibt
erste Antworten*

*zahlreiche
Anwendungen*

*Hoffungsgebiet für die
Logistik*

<i>einige technische Herausforderungen sind noch zu meistern</i>	<ul style="list-style-type: none"> • Damit Lieferungen „durch die Luft“ ökonomisch machbar sind, müssen die Drohnen autonom fliegen können, also ohne Piloten am Boden. Dafür müssen noch eine Reihe technischer Herausforderungen gemeistert werden. Diese reichen von Gewichts-, Reichweiten- und Wetterproblemen bis zur Perfektion der Sensor- und Ausweichtechnologien. Prinzipiell dürfte davon ausgegangen werden können, dass es nur eine Frage der Zeit ist, bis diese Probleme gelöst sind. Darüber hinaus muss auch die nötige Infrastruktur am Boden bereitgestellt werden, etwa Landeplätze.
<i>ein Markt entsteht</i>	<ul style="list-style-type: none"> • Der Markt für Drohnenlieferungen entwickelt sich weltweit. Es gibt bereits viele Pilotanwendungen, insbesondere in Afrika und Asien, aber auch in Europa. Die bislang transportierten Güter reichen von Fast Food bis zu Medikamenten und Blutproben.
<i>Österreich</i>	<ul style="list-style-type: none"> • In Österreich gibt es eine Reihe von Drohnen-Herstellern und einige Forschungseinrichtungen, die sich mit Drohnen aus unterschiedlichen Perspektiven beschäftigen. Amazon testet hierzulande Drohnen und auch die Österreichische Post hat in Graz einen groß angelegten Pilotversuch durchgeführt.
<i>fehlende Regulierung</i>	<ul style="list-style-type: none"> • Die rechtlichen Voraussetzungen für autonom fliegende Drohnen sind in Europa und Österreich noch nicht geschaffen. Es gibt jedoch weltweit zahlreiche Gesetzesinitiativen.
<i>zwei Szenarien</i>	<ul style="list-style-type: none"> • Der Bericht unterscheidet bei der Untersuchung der potenziellen Folgen zwei Szenarien: (1) Lieferungen aller möglichen Güter des täglichen Bedarfs (von der Pizza bis zur Kleidung) und (2) Speziallieferungen zu schwer zugänglichen Orten oder bei besonderer Dringlichkeit, etwa im medizinischen Bereich. Der Bericht kommt zum Schluss dass folgende Aspekte im Detail untersucht werden sollten:
<i>TA-Aspekte:</i>	
<i>Umwelt</i>	<ul style="list-style-type: none"> • Drohnenlieferungen können Wildtiere stören (Vorbeiflug, Lärm); abstürzende Pakete oder Drohnen können die Umwelt verschmutzen; eine Lebenszyklusanalyse und eine Untersuchung des Energieverbrauchs müssten durchgeführt werden.
<i>Gesundheit</i>	<ul style="list-style-type: none"> • Abstürzende Drohnen können Verletzungen verursachen; bestimmte Ladungen könnten dabei auch Verseuchungen hervorrufen.
<i>Arbeitsmarkt</i>	<ul style="list-style-type: none"> • Der Markt für Arbeitskräfte, der im Zuge des Online-Shoppings massiv gewachsen ist, könnte wieder schrumpfen, abhängig von den konkreten Liefermodi und -szenarien. Insbesondere Jobs für gering ausgebildete Menschen könnten wegfallen.
<i>Resilienz</i>	<ul style="list-style-type: none"> • Eine massive Umstellung des Systems auf Drohnenlieferungen „auf der letzten Meile“ müsste berücksichtigen, dass Drohnen nicht immer fliegen können, also ein redundantes Liefersystem benötigt würde.
<i>Ethik</i>	<ul style="list-style-type: none"> • Bekannt aus der Diskussion zu autonomen Kfz stellen sich auch bei autonomen Drohnen ähnliche ethische Fragen, da vorab programmierte Algorithmen im Fall von Unfallsituationen ethische Entscheidungen treffen müssen. Weiters stellt sich etwa die Frage, ob dieser

Service für alle offen sein muss.

- Online-Shopping hat bereits das Verhalten und die Erwartungen der KonsumentInnen massiv verändert, noch raschere Lieferung durch die Luft wird das weiter verändern. *Verhalten von KonsumentInnen*
 - Insbesondere in Szenario 1, in dem es zu praktisch allgegenwärtigen Drohnen in der Luft, auch im urbanen Gebiet, kommen würde, ist Lärmbelästigung zu erwarten, da zwar die einzelne Drohne leise, aber Schwärme laut wären. *Lärm*
 - Es steht zu erwarten, dass Teile der Bevölkerung mit der massiven Nutzung des bodennahen Luftraums auch aus ästhetischen Gründen Probleme haben. *Ästhetik*
 - Um autonom fliegen zu können, wären Drohnen mit einer Vielzahl von Sensoren und Kameras ausgerüstet, die eine große Menge von potenziell sensiblen Daten erzeugen. Diese können gespeichert und missbraucht werden. *Privatsphäre*
 - Drohnen können auf einfache Weise für verschiedene illegale Zwecke missbraucht werden, vom Schmuggel bis zu terroristischen Absichten. Missbrauch ist schwierig unter Kontrolle zu bringen. *Missbrauch*
 - Der Bericht gibt vor dem Hintergrund der o.g. möglichen Folgen eines Einsatzes von Drohnen im Lieferservice einen Überblick über potenzielle Regulierungserfordernisse. Insbesondere müsste das Luftverkehrsrecht „drohnen-fit“ gemacht werden; der Bereich KonsumentInnen- und Privatsphärenschutz untersucht werden; eventuell das Steuer- bzw. Abgabenrecht angepasst werden; sowie wirksame Mechanismen zur Rechtsdurchsetzung gefunden werden. *mannigfache Regulierungserfordernisse*
- Im Abschlusskapitel wird argumentiert, dass aufgrund der vielen offenen Fragen und der Konfliktrichtigkeit dringend eine umfassende, auf Österreich fokussierende TA-Studie mit partizipativen Elementen durchgeführt werden sollte. *vertiefende TA-Studie mit BürgerInnen-Beteiligung für Österreich dringend notwendig*

1 Introduction

While ‘drones’ have been predominantly used by the military until quite recently, they arrived meanwhile in the civilian domain and in everyday life. Hundreds of thousands of toy drones or quadcopters are around worldwide and we all got used to breath-taking shoots from so far unimagined perspectives. Increasingly we encounter surveillance drones, many of us have already watched a video clip of a “drones’ ballet dance” or observed how a tourist films herself with a “flying selfie stick”. In many other areas pilot tests are carried out to test the usefulness of drones, for instance in agriculture, in the humanitarian and medial sector, for inspection of facilities, in the field of mapping and surveying, and last but not least in research, just to mention a few examples. Furthermore the large online retailers, a few post enterprises and numerous start-ups worldwide lead us finally to imagine a world, in which everyday commodities will be delivered by drones through the air.

drones recently became ubiquitous, many fields of application are being tested

In particular the vision of drone-based delivery is not without presuppositions. To realise it, many technical and regulatory obstacles have to be overcome. Given the considerable depth of engagement – considering that the airspace around us, which was so far used by birds and occasional helicopters only, would change profoundly – a number of typical technology assessment (TA) questions are on the table: Are there safety concerns? Are there environmental risks? Could criminals or terrorists misuse the technology? Are we in the face of a societal conflict given the divergent interests involved? Does the current regulatory framework suffice, or do we need new rules?

drones-based delivery is not without presuppositions

This overview study presents this topic along general lines and gives first answers to the above questions. It is mainly based on an extensive internet and literature search, a few expert interviews and on analysis. Given the many open questions and the potential of conflict, we propose that an encompassing TA study with participatory elements focussing on Austria should be carried out urgently.

an encompassing TA study is urgently needed

1.1 Definitions and common abbreviations in the field

<i>a 'drone' is an unmanned aircraft vehicle</i>	A 'drone' is defined as an unmanned aircraft vehicle or system ¹ . This definition has two main parts: we talk about a flying object which has no pilot on board. Drones can be based on different technologies, some resemble more airplanes and have wings, others are more like helicopters with a rotor system. The latter, unlike helicopters, however, have more rotors, at least three, usually four and more. For instance a 'quadcopter' or 'quadcopter' has four rotors and a 'hexacopter' has six rotors. Whatever the number of rotors, they are alternatively called 'multicopter' or just 'copter'.
<i>a 'copter' is a drone with rotors</i>	
<i>civilian drones [as opposed to military drones]</i>	Within this report, we focus on 'civilian drones', that is, unmanned aerial vehicles for civilian purposes only. We distinguish them clearly from drones that are used by the military or for military purposes. In particular, armed drones are not dealt with here. Use of drones by the police, e.g. for surveillance, strictly speaking is no civilian use either.
<i>consumer vs. enterprise drones</i>	Among the civilian drones, some distinguish between consumer drones, also known as personal drones, and enterprise drones ² , also known as commercial drones. While the first category refers to drones that are sold for hobby purposes and recreational use, the latter are used by enterprises to offer services by drones. ³
<i>autonomous drones</i>	As mentioned earlier, drones have no human pilot on board. They could either be piloted remotely by an operator on the ground or they may be more or less flying autonomously. Although a remotely controlled flying object may give the impression of being autonomous, we define an object as 'autonomous' only if it is flying automatically on the basis of its program, meaning that it can operate and reach its target without human supervision, control, or intervention.
<i>levels of autonomy</i>	The concept of autonomous driving is well developed in the context of cars (and even ships: Krieger-Lamina/Nentwich 2016). We may apply and adapt the so-called 'levels of autonomy' used by the car industry to flying vehicles. In Table 1 below shows on the left side the five levels of autonomy with regards to autonomous vehicles. Based on this logic, on the right side we show how these levels of autonomy translate to drones and other autonomous aerial vehicles.

¹ This definition of the European Aviation Safety Agency, easa.europa.eu/easa-and-you/civil-drones-rpas. is also shared by the Federal Aviation Administration of the United States, faa.gov/uas/. All URLs in this report have been last checked on 5.3.2018.

² Business Insider, 08.09.2017, businessinsider.de/commercial-uav-market-analysis-2017-8?r=US&IR=T.

³ gartner.com/newsroom/id/3602317.

Table 1: Levels of autonomy or smartness

SAE level	Name	Narrative Definition	Execution of Steering and Acceleration/Deceleration	Monitoring of Driving Environment	Fallback Performance of Dynamic Driving Task	System Capability (Driving Modes)	Drone Smartness-Level
Human driver monitors the driving environment							
0	No Automation	the full-time performance by the <i>human driver</i> of all aspects of the <i>dynamic driving task</i> , even when enhanced by warning or intervention systems	Human driver	Human driver	Human driver	n/a	A. Remote-controlled flight from ground with the pilot controlling with direct visibility
1	Driver Assistance	the <i>driving mode</i> -specific execution by a driver assistance system of either steering or acceleration/deceleration using information about the driving environment and with the expectation that the <i>human driver</i> perform all remaining aspects of the <i>dynamic driving task</i>	Human driver and system	Human driver	Human driver	Some driving modes	B. Remote-controlled, cameras on drone stream video to operator
2	Partial Automation	the <i>driving mode</i> -specific execution by one or more driver assistance systems of both steering and acceleration/deceleration using information about the driving environment and with the expectation that the <i>human driver</i> perform all remaining aspects of the <i>dynamic driving task</i>	System	Human driver	Human driver	Some driving modes	C. Remote-control by autopilot with GPS stabilization
Automated driving system ("system") monitors the driving environment							
3	Conditional Automation	the <i>driving mode</i> -specific performance by an <i>automated driving system</i> of all aspects of the <i>dynamic driving task</i> with the expectation that the <i>human driver</i> will respond appropriately to a <i>request to intervene</i>	System	System	Human driver	Some driving modes	D. Automatic: programmed route with self-reliant landing
4	High Automation	the <i>driving mode</i> -specific performance by an <i>automated driving system</i> of all aspects of the <i>dynamic driving task</i> , even if a <i>human driver</i> does not respond appropriately to a <i>request to intervene</i>	System	System	System	Some driving modes	E. Autonomous: programmed to target, self-reliant route-planning, self-sufficient in averting obstacles
5	Full Automation	the full-time performance by an <i>automated driving system</i> of all aspects of the <i>dynamic driving task</i> under all roadway and environmental conditions that can be managed by a <i>human driver</i>	System	System	System	All driving modes	

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Source: SAE International (2014)⁴, adapted by Krieger-Lamina/Nentwich (2016), partly translated by authors

For additional reference, see the following short list of typical abbreviations used in the context of drones:

BVLOS	Beyond Visual Line of Sight
FPV	First Person View
MAV	Micro Aerial Vehicle
OPV	Optionally Piloted Vehicle
RPAS	Remotely-Piloted Aircraft Systems
SAA	Sense and Avoid Technology
UAV	Unmanned Aerial Vehicle
VFR	Visual Flight
VLOS	Visual Line of Sight

⁴ motorauthority.com/image/100593055_sae-levels-of-autonomy.

1.2 Structure of this report

*chapter 6 is this study's
core, focusing on
potential impacts of
widespread drone
delivery*

Apart from this introductory chapter 1 this report has seven more chapters. In chapter 2 we give an overview of the areas of application of drones in the civilian domain, focusing on delivery drones in the second part. chapter 3 describes the technical status quo of the technology and the current challenges. In chapter 4 we give a preliminary overview on the emerging market of drone deliveries. chapter 5 gives a short introduction on the current legal rules applicable to (delivery) drones. Chapter 6 is the core chapter of this report. It distinguishes between a more far-reaching and a much more restricted scenario of drone delivery and then systematises the potential main effects, from safety and environmental issues to various kinds of societal impacts and potentials for conflict. On the basis of the results of the previous chapter, chapter 7 summarises the potential need for regulation. Finally, the concluding chapter 8 contains our reasons for advocating an encompassing and participatory technology assessment study, because the timing is perfect for anticipatory governance.

2 Application areas for civilian drones

2.1 General overview

While in the media and in everyday experience we encounter mainly toy drones and those employed by the film industry, there are many more areas of application for this novel technology. Its main characteristics – being relatively cheap, lightweight, fast, versatile, relatively quiet and so on – open up many potential fields of action in which drones may solve problems or replace the incumbent socio-technical arrangements, because they are more efficient or would improve the quality of a service. And indeed, there are already many pilot projects and sometimes regular operations in the field. See Table 2 for an overview, followed by a more detailed explanation and sources to each of the areas.

Table 2: Application areas for civilian drones

Disaster and emergency response/civil defence	Private surveillance
Environmental protection	Science
Surveying and mapping	Agriculture
Film Industry	Facility management and maintenance
Journalism	Delivery of goods
Hobby/toy	Law enforcement
Tourism	Illegal applications

In the following we give an overview of the current fields of usage of drones:

Disaster and emergency response as well as civil defence purposes can include in particular situation survey, location survey, civil protection through monitoring, search-operations. Drones can further be used as flying ad-hoc Internet access providers (especially in remote locations), and they can support rescue helicopters in their operations (as a 'second eye', see Bergtora Sandvik/Lohne 2014).⁵ In the insurance business drones can be used for quick data collection, e.g. after a flood, for location survey, and for mapping.⁶

In the field of environmental protection drones can be used for data collection, location survey, and mapping.⁷ In general, mapping and surveying is a prime field of application, for instance for recording footage, where drones produce special maps (not only high resolution pictures, but also infrared and other wave-lengths, laser images etc.).⁸

The film industry uses drones to achieve spectacular shots from new perspectives; in addition footage is also often used for marketing and other commercial purposes.⁹ In journalism current applications include observing sport events and being able to take footage from locations that are difficult to reach (closer to the target location, or approaching locations that are closed for humans)¹⁰.

Drones are also used for the purposes of arts. This can manifest itself in many forms, such as 'dance' performances (e.g. 'drone ballet'¹¹), perfor-

current fields of usage of drones:

emergency response

insurance business

environmental protection

mapping and surveying

film industry

journalism

arts

⁵ European Commission, 21.11.2016, ec.europa.eu/echo/field-blogs/stories/how-drones-can-help-humanitarian-crises_en.

⁶ Air-World, 20.06.2017, air-worldwide.com/Blog/5-Ways-Drones-Are-Transforming-the-Insurance-Industry/; The Balance, 03.02.2017, the-balance.com/how-drones-change-insurance-industry-4125242.

⁷ Environmental Law Institute, February 2017, epic.org/news/Drones-and-Environmental-Monitoring-ELI.pdf; SenseFly sensefly.com/industry/environmental-protection/; Remote Aerial Surveys remote-aerialsurveys.co.uk/environmental-monitoring.

⁸ New Atlas, 10.05.2017, newatlas.com/intel-drones-falcon-8-bridge-inspection/49452/; DJI, 11.10.2016, newatlas.com/intel-drones-falcon-8-bridge-inspection/49452/.

⁹ Production Hub, 02.10.2017, productionhub.com/blog/post/drones-and-their-impact-in-the-film-industry; SkySeeVideo, 16.08.2017, skyseevideo.com/drones-changing-film-industry/; Boston Globe, 23.06.2017, bostonglobe.com/business/2017/06/23/drones-rising-valuable-tool-commercial-film-industry/mbvWUH4Ydc5rkdHrMqxgN/story.html.

¹⁰ There are a few websites dedicated to this topic: Professional Society of Drone Journalism, dronejournalism.org; and Drone Journalism Lab, dronejournalismlab.org. Furthermore, several articles discuss the topic: Cisco, 03.07.2017, newsroom.cisco.com/feature-content?articleId=1851973; Simulyze, 27.03.2017, simulyze.com/blog/drones-and-journalism-how-drones-have-changed-news-gathering.

¹¹ FuturZone, 19.12.2015, futurezone.at/digital-life/drohnen-verhuellen-nacktaenzer/170.384.779/slideshow.

	mances of drone swarms on the sky. ¹²
<i>recreational activity, toy</i>	Obviously drones can be used for recreational purposes. This includes model-building, air races, private filming, using drones as a flying selfie-stick, and generally as entertainment for children, as well as adults. ¹³
<i>tourism</i>	Apart from the just mentioned use of drones by the tourists instead of photo cameras, they can be used for marketing purposes, providing footage from new perspectives to advertise a particular place or event. ¹⁴
<i>private surveillance</i>	Drones can be used by private persons as well as commercial enterprises as burglar alarms or supplements to CCTV on private estates; they can as well be tools for private investigators. ¹⁵ Although this is not a civilian application in the narrow sense also the police may use drones for surveillance, in particular during events (e.g. protest marches, sports events, cultural open-air events), or, potentially, for the pursuit of suspects, etc. ¹⁶
<i>illegal applications</i>	Drones can also be used for illegal purposes, for instance for smuggling (e.g. of weapons into prison buildings, of drugs across a border, of illegal documents or money) ¹⁷ , and for criminal (e.g. shooting) or terrorist attacks (for e.g. transporting of bombs); finally, espionage may be a wide field of application.
<i>science</i>	Within the domain of science drones can serve in particular as data collection devices, for instance in hard-to-reach areas like caves, the wilderness, or at archaeological sites; surveying and monitoring of wildlife and measuring environmental parameters (quality of air, level of pollution) may be easier and more efficient; finally special cameras (night light, infrared) can be used for observation. ¹⁸
<i>maintenance and facility management</i>	The monitoring and inspection of various sites and large infrastructure nets, like pipes systems, rooftops, cables, rail tracks, ski-lift pillars etc. can also be done by special drones. ¹⁹

¹²Tech Radar 10.02.2018, techradar.com/news/intels-drones-broke-a-world-record-at-the-winter-olympics-opening-ceremony.

¹³Dronethusiast, dronethusiast.com/drone-videos-that-blow-your-mind/; TechCrunch, 08.01.2018, techcrunch.com/2018/01/08/watch-intels-drones-play-the-piano-and-dance-in-the-air/.

¹⁴Global Drone Solutions gdronesolutions.com/use-drones-tourism-marketing/; Skytango, 13.04.2016, skytango.com/how-drones-are-changing-tourism-marketing/.

¹⁵Tech Crunch, 22.08.2016, techcrunch.com/2016/08/22/drone-startup-aptonomy-has-created-robotic-flying-security-guards/.

¹⁶For a science-fiction account of police drones see (Hillenbrand 2014).

¹⁷FutureZone, 05.02.2015, futurezone.at/digital-life/us-start-up-plant-marihuana-lieferung-per-drohne/145.301.373.

¹⁸Columbia University, 16.06.2017, blogs.ei.columbia.edu/2017/06/16/how-drones-are-advancing-scientific-research/; Nature, 12.06.2013, [nature.com/news/drones-in-science-fly-and-bring-me-data-1.13161](https://www.nature.com/news/drones-in-science-fly-and-bring-me-data-1.13161).

¹⁹Control Solutions, 25.04.2017, controlyourbuilding.com/blog/entry/drones-in-facilities-management-saving-lives-time-and-money; ORF-Salzburg, salzburg.orf.at/m/news/stories/2737193/.

Farming and agriculture is a field where drones may support the digitisation and precision farming efforts are currently under way. For instance particular parameters of the fields may be surveyed (such as humidity, temperature, pest attacks etc.); the application of fertilizers could be optimised and drones can be used for protecting young animals sleeping in the grass in front of a harvester. Drones can also be used as scare-crows.²⁰

agriculture

Delivery of goods can entail the transportation of small goods, meals, everyday supply goods, pharmaceutical products, medical samples, spare parts etc. This will be the main focus of this report. Passenger transport entails aspirations to use drone technology to transport people, i.e. in small electrical copters with several rotors for short distance flights.²¹

logistics

2.2 Drones for delivery in focus

In this report, the focus is on one specific application of drones, namely the delivery of goods. Either due to popular trends or economic considerations the idea of delivering items (small parcels, food, medicine and others) by drones is an idea that several enterprises from various fields have taken up and continue to engage with (e.g. Bruckner 2017).

Following initiatives of small enterprises²², large corporations as diverse as Amazon, Google (Project Wing), DHL or Mercedes-Benz and many others started to invest a lot of resources in testing delivery by drones and lobbying for making this service a reality. Many start-ups are launching delivery services by drones all around the world, testing the market and the legislative frameworks with this novel approach. Furthermore national companies such as national postal service providers have expressed interest in this novel idea, including the Austria Post.²³

a new market is unfolding

Concerning the entire phenomenon, many questions arise: would delivery services by drones be successful on the market only for special items (e.g. in the medical sector), or would it expand to the delivery of all kinds of goods. Will this be a special service, serving only a small fraction of the population, or will this practice replace all existing delivery practices? Will fast delivery by drones be a premium-service for special occasions, or will society demand acceleration (e.g. delivery within one hour) for all deliver-

many open questions

²⁰Microaerial Projects, microaerialprojects.com/services/agricultural-environmental-monitoring/.

²¹A successful test was just recently carried out, see TechCrunch, 05.02.2018, techcrunch.com/2018/02/05/watch-ehangs-passenger-drone-take-flight/.

²²Like pizza delivery by drones in New Zealand by the company Dominos, see CNBC, 16.11.2016, cnbc.com/2016/11/16/dominos-has-delivered-the-worlds-first-ever-pizza-by-drone-to-a-new-zealand-couple.html.

²³Post AG has also engaged itself in a pilot project with drones, mapping up and testing the feasibility and economic dimensions of the idea. For further information on this see chapter 4.2.

ies? Finally, would even long-distance delivery be a field for drones?

These and many other questions will be opened up and discussed through the rest of the report. First, we start by examining the technical aspects of these questions.

3 Technical challenges

Civilian drones as multicopters are relatively recent. It is only a few years that they appeared on the market and increased in numbers. No wonder that the technology is still in development and the technicians face a number of challenges with a view to construct viable, secure and well-functioning systems. In this chapter we address a few of the main issues to be solved on the path to widespread use of delivery drones.

*drones are technically
not yet fully ripe for
delivery services*

3.1 Autonomous flying

Launching delivery services by drones seems only reasonable when they can be operated in an autonomous mode – except for very special scenarios (e.g. occasional fast delivery to remote areas). Otherwise the main reasons for launching such a service (such as cost reduction, automatization, speed) would be compromised if pilots are needed for each drone. However, to operate a drone autonomously is challenging in technical terms.–

The main challenge regarding the operation of autonomous delivery drones is the development of a robust *sense & avoid technology* (AAE/3AF 2015, p. 40ff). This term refers to a drone's capability to take-off, fly and land at the intended location and in the intended manner without colliding on the way. In order to do so the device has to have a continuously functioning and accurate geo-location device; clear vision through cameras (or radar) and well-developed algorithms to execute accurate landing. Beyond these, delivery drones would need to have the technical readiness to overcome challenges that weather, physical obstacles on the way (tall buildings, electric poles, cables, flying birds, other drones, and not least humans) and internal malfunctions could cause.

*sense & avoid
technology to be
perfected*

It is yet unclear which sense & avoid technologies (or which combination) would be the most reliable and cost-efficient. In particular, the development and testing of GPS, radar, infrared and other technologies are still ongoing. Up to today the threat of drones crashing (with another object or with each other) is a challenge, which the technicians have so far not solved satisfactorily.

*reliable geo-location is
essential*

Furthermore, delivery drones would need to be able to respect the designated no-fly zones (see section 7.1 on geo-fencing), i.e. the need to have up-to-date access to the respective databases or air signals. Finally they need the ability to communicate and coordinate autonomously and constantly with the other air traffic and with air control.

respecting no-fly zones

communication skills

3.2 Further technical challenges

Apart from enabling secure autonomous flights, there is a wide range of further technical challenges for a drone-based delivery system to function properly.

<i>atmospheric conditions</i>	A prime concern is the weather. Most pilot projects to date have been carried out in 'ideal' weather conditions which raise the question: How would drones perform when there are typical, non-ideal conditions? Wind, precipitation (rain, snow), humidity, strong UVA radiation, fog, zones of low air pressure etc. are still difficult external circumstances for delivery drones ²⁴ . Technical readiness of delivery drones need to reach a level so that they are able to cope with all possible micro-climate conditions of the territory they fly through. These questions would become especially relevant when we imagine launching a wide-scale delivery service that offers 'instant' delivery. ²⁵ In addition, low temperatures would decrease battery performance significantly and hence reach (see below).
<i>securing parcel on drones</i>	Beyond weather, an additional technical challenge is how to efficiently secure parcels on drones. The scenario of losing packages involves a number of additional concerns, in particular questions of responsibility and insurance, as well as the consequences of delivering hazardous materials or if precious or vital parcels are lost (e.g. with a badly needed blood sample).
<i>cargo weight restrictions</i>	Regarding further aspects of delivery, the question of 'weight' represents another challenging factor. To date, there has been a number of pilot tests carried out with parcels ranging between 0.5-3.5 kg. ²⁶ If the weight of the good exceeds this range, the wide-scale nature of a possible service would be in question (or different delivery drones would need to be employed that may affect the cost of the service – which is "advertised" to a more economic option compared to regular delivery services). ²⁷
<i>decisive factor battery capacity</i>	As the typical delivery drone has an electric engine, the battery capacity directly contributes to the overall weight of the aircraft and hence to the distance the drone is able to fly in one go. Reach is a decisive factor when we speak about both feasibility and cost-efficiency. While energy efficiency and battery capacity is certainly a field of rapid improvement, the current drone models diverge a lot in their capabilities based on the type of engine and battery and performance in speed and distance. A pilot project for example which was carried out in collaboration with the Austrian Post, tested drones with packages that weighted maximum 3.5 kg and which flew with up to 60 km/h to a 10 km distance.

²⁴UPS tests show delivery drones still need work', techcrunch.com/2017/02/21/ups-tests-show-delivery-drones-still-need-work/.

²⁵futurezone.at/science/tu-graz-testet-drohnen-als-paketzusteller/274.382.090.

²⁶futurezone.at/science/tu-graz-testet-drohnen-als-paketzusteller/274.382.090.

²⁷See e.g. RedStage, 01.04.2017, redstagfulfillment.com/drone-delivery-is-about-to-revolutionize-the-supply-chain-industry/.

Another relevant technical challenge is the act of re-mating with the delivery van. This part of the delivery sequence is reportedly one of the most challenging aspects when gross delivery is carried out with an accompanying van or truck.²⁸

re-mating with the delivery van

Lastly, there is a group of technical challenges that would result from vandalism and other human-generated actions against delivery drones: Spoofing is an act of manipulating the course or behaviour of drones by sending false GPS signals to them. By this, hijacking or crashes can be achieved. To date, technology to prevent such actions or to evade them is still underdeveloped, anti-jamming technology, shielding against radiation etc. seems to be in its infancy. But when such a service becomes widespread, its importance is going to increase and become outstandingly relevant.

spoofing and hijacking

3.3 Necessary infrastructure

In order to have delivery by drones as an everyday reality, several infrastructural elements need to be worked out and established.

If delivery by drones would be permitted in urban settings, the first question to be addressed is where they would land. Initiatives aspiring for drone delivery in urban settings have approached the matter in various ways:

landing spots

- In sub-urban areas, delivery to the backyard, balcony, terrace or doorway are imagined as viable options; in more urban areas they are not available, therefore
- WinPort (a German company) is currently developing landing ports that can be attached to windows;²⁹
- Connect Robotics (a Portuguese company)³⁰ builds designated landing points for delivery drones, at which parcels could be collected;
- Matternet (a Silicon Valley start-up)³¹ has approached the matter in a similar manner, diverging only in that aspect that it builds stations on private grounds (such as hospitals).³²
- There are pilot tests in the United Arab Emirates³³ and on the grounds

²⁸Blick, 27.09.2017, [blick.ch/news/wirtschaft/neuer-service-von-mercedes-und-coop-heute-weltweit-erster-test-in-zuerich-die-drohne-liefert-das-paekli-zum-auto-id7385534.html](https://www.blick.ch/news/wirtschaft/neuer-service-von-mercedes-und-coop-heute-weltweit-erster-test-in-zuerich-die-drohne-liefert-das-paekli-zum-auto-id7385534.html).

²⁹win-port.de.

³⁰connect-robotics.com.

³¹mttr.net.

³²The Verge, 20.09.2017, [theverge.com/2017/9/20/16325084/matternet-autonomous-drone-network-switzerland](https://www.theverge.com/2017/9/20/16325084/matternet-autonomous-drone-network-switzerland).

³³By Costa Coffee, arabianbusiness.com/industries/technology/379426-costa-coffee-tests-drone-delivery-service-in-dubai.

of a universities (Virginia Tech, US³⁴) aiming to deliver goods right into the hands of recipients.



Figure 1: Delivery drone brings coffee on the beach

Source: Arabian Business 2017³⁵

delivery modes and needs on the ground

There are different delivery modes: The drone

- lands and deposits the parcel,
- stays in the air and lowers the parcel with a rope, or
- drops the parcel with a small parachute attached.

There are trials with all three methods, and the manner of choice will be dependent on the actual circumstances of the target location.^{36,37,38} Depending on the delivery method, a different infrastructure on the ground may be needed, e.g. a basket in which the dropped parcel would fall or specifically marked and possibly sheltered areas for drone delivery. Here regulatory measures are to be expected (see below chapter 7).

parcel design

Additionally, there is another aspect regarding infrastructure that needs to be considered: the specific design of the parcels that the drones would be carrying. Obviously the current cardboard boxes would not be suitable for all weather conditions and some goods would need special protection that

³⁴ time.com/4493291/google-tests-drone-deliveries-virginia-tech/.

³⁵ arabianbusiness.com/industries/technology/379426-costa-coffee-tests-drone-delivery-service-in-dubai.

³⁶ theverge.com/2017/9/20/16325084/matternet-autonomous-drone-network-switzerland.

³⁷ technologyreview.com/s/602356/burrito-delivering-drones-seriously/.

³⁸ theverge.com/2016/4/5/11367274/zipline-drone-delivery-rwanda-medicine-blood.

goes beyond the usual packaging fillings as there is always the danger of dropping them from the air. Furthermore it may be necessary to develop more streamlined parcels as opposed to the usual, rectangular shapes. Another question would be whether in the future there would be a need for standardized parcels (shape and size), similar to the EURO pallets, in order to allow for general delivery services as opposed to company-specific services.

Our interim conclusion is therefore that several technical aspects and standards of drones still need further development before it would be safe enough to launch commercial delivery services.

4 A market for drone deliveries in the making

Despite the fact that technological readiness of delivery drones is not yet fully developed, it can be observed that initiatives continuously pop-up aspiring to put delivery services by drones onto the market (Lee et al. 2016; AAE/3AF 2015, p. 30ff).

4.1 Worldwide development

In the landscape of services by delivery drones various approaches can be observed. Some business models are built on the idea of transporting special goods, aiming to serve a niche market, some target a wider audience. The former specialise on the delivery of medicine, blood samples, organs and business-specific small parcels. The latter business models usually target local delivery, frequently fast-food (e.g. pizza, burrito), various drinks (coffee, beer) or the delivery of small non-perishable goods (such as books, small electronics, etc.). Other business models would aim to expand, perhaps even revolutionize the whole market of delivery of small-scale packages that are now delivered by delivery vans. Note that often these services are closely linked to the parallel implementation of other digital tools, in particular online ordering.

*niche markets:
special goods*

*local delivery of pizzas
and drinks*

general parcel delivery

Within this landscape of drone manufacturers there are a couple of large enterprises whose activities already stand out in pursuing further applications for drones.³⁹ The biggest producers are in China and the USA (see Table 3). The figures are impressive: In 2016 about 2.2 million drones have been manufactured and sold for recreational and commercial use.⁴⁰ That shows an estimated 60 % growth in production numbers, and 35 % growth in sales compared to 2015.⁴⁰ Revenues for toy drones and commercial drones were 1.7 billion USD and 2.8 billion USD in 2016, respectively.⁴⁰ Revenues for personal drones and commercial drones are estimated to rise to 11.2 billion USD by 2020.⁴⁰

drone manufacturers

³⁹ See also droneii.com/drone-market-environment-map-2018 for a large database of the drone market.

⁴⁰ Gartner, 09.02.2017, gartner.com/newsroom/id/3602317.

Table 3: Largest producers of drones worldwide

Enterprise	Headquarter	Specialisation	Website
DJI	China	producing a wide range of commercial and recreational drones ⁴¹	dji.com
Zero Zero Robotics	China	embedded Artificial Intelligence-powered camera in drones	gethover.com
3D Robotics	USA	autonomous drones with GPS point planning, so-called “smart drones”	3dr.com
Yuneec	China	manufacturing of commercial and recreational drones, software development ⁴²	us.yuneec.com
Parrot SA	France	recreational and commercial UAVs especially quadcopters	parrot.com

the main actors in the field of logistics

Amazon, Google, and DHL are the largest companies worldwide that are on the frontline of testing the employment of drones for various services. However, not these big companies are the most important players of this developing industry. Rather there are dozens of start-ups at various locations worldwide that aspire to develop this market and which already run delivery services using drones. Indeed, the majority of the most widely known initiatives by drones have been carried out by small start-ups (e.g. *Zipline International, Matternet*). Note that only a few of these companies are located in Silicon Valley, but the hotspot of delivery services by drones seems to be Africa (and Asia) – however some of those operators have their headquarters in first-world countries (see sub-section 4.1.1 below for specific examples).

⁴¹DJI also covers approximately 70% of the market, see Business Insider, 09.08.2017, businessinsider.de/commercial-uav-market-analysis-2017-8?r=US&IR=T.

⁴²Yuneec together with DJI have been referred to as the ‘Samsung and Apple of the drone industry’, see Business Insider, 09.08.2017, businessinsider.de/commercial-uav-market-analysis-2017-8?r=US&IR=T.

Table 4: Big players and start-ups in the delivery sector

Enterprise	Headquarter	Specialization	Website
Zipline International	USA	blood samples and medical supplies	flyzipline.com
Matternet	USA	emergency goods and medical supplies	mttr.net
Amazon	USA	small parcels	amazon.com
Google/ Project Wing	USA	small parcels	x.company/projects/wing/
DHL	Germany	small parcels	dhl.com
Flirtey	New Zealand	pizza	flytrex.com
Flytrex	Israel	fast food	flytrex.com
Mercedes-Benz	Switzerland	coffee and sandwiches	mercedes-benz.com
Win-Port	Germany	small goods	win-port.de
JD.com	China	small goods	jd.com
AEON	Japan	small goods	aeon.info
Connect Robotics	Portugal	small goods	connect-robotics.com
Alibaba	China	small/middle-weight goods	alibaba.com
Asda	USA	small parcels	asda.com
Rakuten	Japan	small goods	rakuten.com
Starship Technologies	Estonia & UK	small goods	starship.xyz

In addition, it is noticeable that several public sector entities also perceive the idea of delivery by drones as a potential opportunity. Numerous national post enterprises entered partnerships with start-ups specialized in delivery services by drones and launched pilot projects, most notably those of Switzerland, France, Finland, the United Kingdom, Ukraine, South Korea, Australia and also Austria.

*public-sector
companies*

Media coverage of delivery drones is especially high. Many articles follow and report on the development of this technology, giving account of initiatives, estimations, calculations and perceptions regarding the future, cost-efficiency, technical-readiness and social aspects of delivery drones.⁴³ Occasionally one gets the impression of a hype or technology push agenda. The social-media presence of delivery drones is outstanding. It is obvious that the theme is a hot topic from the point of view of various spheres and sectors from investment firms to public institutions.

*delivery drones are
a hot topic*

⁴³Television, radio, news portals, magazines and websites of investment firms, business magazines, tech magazines, social media (Twitter and Facebook), and other field-specialized websites (Drone World Expo; AUVSI International; Drone Life).

*associations,
conferences, expos*

Furthermore, there are several events and organizations that specialize on unmanned aerial vehicles and commercial services by drones: for instance the Drone World Expo, AUVSI Unmanned and AUVSI Exponential by the Association for Unmanned Vehicle Systems International.⁴⁴

4.1.1 Selected pilot tests with delivery drones internationally

The sphere in which delivery drones have first proven their usefulness and efficiency was the sphere of healthcare in developing countries. The companies that launched pioneering services were Matternet and Zipline International.

*emergency good delivery
in developing countries*

Matternet has been the first to carry out pilot projects in Haiti, Lesotho and the Dominican Republic in 2014, transferring emergency goods and medical supplies to areas that are difficult to access. In 2015 they carried out further pilot projects in Papua New Guinea and Bhutan.⁴⁵ *Zipline* International is known to be the organization that started the first and still operational commercial delivery service in Rwanda in 2016, delivering blood samples and medical supplies. Further on, just recently in August, 2017 they acquired a contract with the Tanzanian government to launch permanent services in Tanzania as well.

food delivery

The value of services by delivery drones have been first recognized in such locations where sufficient infrastructure was lacking, or streets were in a bad condition, but there are other pilot projects that saw business potential from a different angle. A number of pilot projects were carried out for testing drones for food delivery. One noteworthy example was the pilot delivery of pizza in New Zealand in November 2016 by a drone start-up named *Flirtey* together with *Domino's Pizza Enterprise Limited*.⁴⁶ Another interesting example is *Flytrex* (an Israeli company), which tested delivery of fast food in Reykjavík, Iceland. Since August 2017 the service went beyond the experimental phase – so it is the first permanent food delivery service by drones. Others are following, such as *Mercedes-Benz*, which launched in September 2017 a pilot project in collaboration with *Matternet* and the Swiss company *Siroop* to deliver coffee in Zürich. By now this pilot has been completed and the latest articles say that this service will be launched in Zürich on a continuous basis, making it the world's first delivery service by drones in an *urban* setting.⁴⁷

⁴⁴ auvsi.org.

⁴⁵ fortune.com/2015/05/01/matternet-drone-delivery/.

⁴⁶ dominos.com.au/inside-dominos/media/november-2016-pizza-by-drone-a-reality-with-world-first-customer-deliveries-in-new-zealand.

⁴⁷ cleantechnica.com/2017/09/25/matternet-launching-first-permanent-autonomous-drone-delivery-network-switzerland/.

Other than the mentioned examples there are several more reports about food delivery services in various locations all around the world (India, Korea, Japan, etc.), but so far, due to various regulations and regulatory processes (see section 5.2) the launch of these services is in limbo.

4.2 The status quo in Austria

In Austria there are a number of companies and start-ups that engage themselves with drones. Some of them are manufacturers, others offer various commercial services by drones, and a few do both.

Austria has a number of manufacturers of drones, although only some for commercial activities. *Schiebel* produces drones and other unmanned vehicles for both commercial and military purposes. *Stromkind* is a company that develops aerial, 'land', and 'aquatic' drones to fulfil environmental protection, disaster response, and risk mitigation functions. It might be worthy to note that just recently, this company won the Pioneer's Challenge Award for 2017.⁴⁸ *Austrodrone* and *Diamond Aircraft* are also special purpose drone manufacturers. *Dynamic Perspective* is a manufacturer of various unmanned aerial vehicles (UAVs), high precision cameras and sensor stabilization systems, which are specifically developed for the film industry. *Airborne Robotic* is not a manufacturer, but provides services for video and photography. *Riegl* is a company that has over 40 years of experience in developing and applying laser measurements systems, and which also employs drones and various other unmanned vehicles while doing so.

*quite a few Austrian
drone manufacturers*

Other entities that engage themselves with drones are various universities and research institutes such as the Technical University Graz, Technical University Wien, AEC Linz, and the Alpen-Adria-University of Klagenfurt.

The Technical University of Graz has a division that engages itself with drones within its Institute of Computer Graphics and Vision. The division is called "Dronespace" which is a Micro Aerial Vehicle (MAV) Flying Environment, where testing of drones is carried out with a motion tracking system called Optitrack⁴⁹. With this technology, researchers are aiming to better understand and control the movement of drones and improve its sense & avoid technology.

The Technical University of Vienna is engaged with the technology of combining autonomous flights with Smartphones. Within the project SmartCopter⁵⁰, researchers within the laboratory of Virtual and Augmented Reality⁵¹ are testing an on-board core processing unit on the basis of

⁴⁸pioneers.io/blog/post/stromkind-wins-pioneers-challenge-pioneers17.

⁴⁹optitrack.com.

⁵⁰ims.tuwien.ac.at/projects/smartcopter.

⁵¹ims.tuwien.ac.at/research/virtual-and-augmented-reality.

smartphones to allow for autonomous localization, mapping, exploration and navigation in an unknown environment, without requiring additional ground hardware for UAVs.⁵² This could allow to reach an additional level within the development of delivery services by drones if on a mass scale.

Table 5: Austrian drone manufacturers and service providers

Enterprise	Headquarter	Specialisation	Website
Schiebel	Vienna	development of larger UAVs and mine detection systems - also for the military	schiebel.net
Stromkind	Vienna	development of UAVs for environmental protection, disaster response, risk mitigation	stromkind.at
Austrodrone	Alberschwende	drone manufacturing and flight services	austrodrone.com
Dynamic Perspective	Vienna	development of UAVs and high precision cameras, sensor stabilization systems	dynamicperspective.com
Airborne Robotics	Klagenfurt	drone manufacturer especially for the film industry	airborne-robotics.com
Riegl	Horn	development of laser measurement systems that are employed by using drones	riegl.co.at
Drone Rescue	Graz	development of parachutes for drones	dronerescue.at
Team BlackSheep	St. Anton a. A.	manufacturing quadcopters	team-blacksheep.com

The Ars Electronica Center (AEC) in Linz engaged itself in a project that aimed at making a spectacle with 100 autonomous drones to demonstrate what can be achieved by the power of technology and programming. This performance was created in 2016 in collaboration with Intel and made a world record at this time.⁵³

In the Alpen-Adria-University Klagenfurt, within the scope of project SO-SIE⁵⁴, researchers have specialized in advancing system intelligence connected to drone technology, where they are working to develop a method for dimensioning a drone-based delivery service that would be used by start-ups and companies that plan on deploying a drone delivery service.⁵⁵ The research group is funded by the Carinthian Economic Development

⁵²ims.tuwien.ac.at/projects/smartcopter.

⁵³Since then, Intel surpassed previous world record at the opening of the 2018 Winter Olympics in South Korea, techradar.com/news/intels-drones-broke-a-world-record-at-the-winter-olympics-opening-ceremony.

⁵⁴aau.at/en/blog/packages-delivered-by-air-drones-as-delivery-service/.

⁵⁵nes.aau.at/?p=7093.

Fund and works closely in collaboration with Lakeside Labs GmbH⁵⁶.

To date, there is only one known company in Austria that carried out a delivery pilot project by drones, and that is the Austrian Post (Post AG)⁵⁷. Please see next section for details.

See also a recent bachelor thesis, to be defended at the Vienna University of Economics and Business Administration (Lustig 2018), which approaches the subject from a transport logistics perspective.

4.2.1 Pilot projects in Austria with delivery drones

Austria seems to be an interesting territory concerning the development and testing of delivery drones, perhaps because of the varied landscape. For instance, it is one of the few sites worldwide where Amazon's delivery drones are being developed and tested⁵⁸, and there are a number of Austrian start-ups which engage themselves with the development of delivery drones for emergency response (e.g. *Stromkind*); finally, just recently the Austrian Post conducted a pilot project, testing alternative delivery methods by drones.

Amazon testing area

In collaboration with Technical University Graz, Austria gives home to the development of Amazon drones' sense & avoid technology. The research centre is situated in the outskirts of Graz where the work is led by leading experts from various technical universities and research institutes.

⁵⁶ Lakeside Labs is an entity that claims to be a 'hub for science and innovation in self-organizing networked systems' in Klagenfurt, lakeside-labs.com.

⁵⁷ tugraz.at/tu-graz/services/news-stories/tu-graz-news/einzelansicht/article/post-ag-und-tu-graz-erproben-autonome-transportlogistik-auf-der-letzten-meile/.

⁵⁸ theverge.com/2016/5/10/11642686/amazon-prime-air-lab-drone-delivery-microsoft-experts-austria; techcrunch.com/2016/05/10/amazon-prime-air-opens-austrian-outpost-with-focus-on-sense-and-avoid-tech/.

*pilot project of the
Austrian Post*

In another notable pilot project with drones the Austrian Post was recently experimenting with alternative delivery methods. In September 2017 a pilot project called 'HEIDI' was completed. The test comprised 1000 test flights with drones that were carrying up to 3.5 kg packages to a distance of 10 km and flying with up to 60 km/h to a rural setting in the Alps in Styria. Besides the drones, a special utility vehicle called 'ELI' was also tested. In this setting, the drones were completing the deliveries, flying off of a special delivery van and repeatedly returning to it while the van is in motion. The pilot project was reported to be successful, functioning well from a technical point of view in 99% of the cases.⁵⁹ The team announced its plans to test delivery by drones very soon within an urban setting as well (in the centre of Graz).⁶⁰

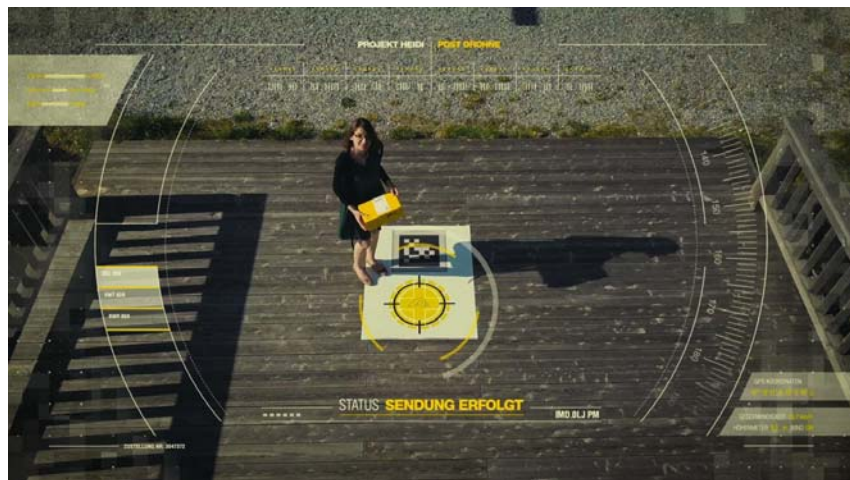


Figure 2: Customer receiving a parcel by a drone from the Austrian Post

Source: futurezone.at⁶¹

*provisioning an
alpine hut*

In summer 2017 another experiment with a delivery drone took place: Initiated by the Naturfreunde Österreichs, a hiking NGO owning a number of shelters in the mountains, a (remote-controlled) drone delivered food to a hut in the alps in the Salzburg region. The drone could carry 100 kg, fly with 120 km/h and up to 1000 meters. The trial was successful; the main problem was the capacity of the batteries (only 20 min). The initiator argued that this may be the future for provisioning remote huts as an alternative to expensive and environmentally unfriendly helicopter flights.⁶²

⁵⁹ futurezone.at/science/tu-graz-testet-drohnen-als-paketzusteller/274.382.090.

⁶⁰ Apart from drones the Austrian Post also experimented with unmanned vehicles as an alternative delivery method. Within this pilot, TU Graz, Post-AG und i-Tec Styria conducted a pilot project in downtown of Graz, testing a land unmanned vehicle, kurier.at/wirtschaft/steirischer-roboter-stellte-post-in-graz-zu/293.798.027.

⁶¹ futurezone.at/science/tu-graz-testet-drohnen-als-paketzusteller/274.382.090.

⁶² ORF Salzburg, 21.8.2017, salzburg.orf.at/news/stories/2861539/.

The local helicopter company seems not alerted, arguing that such drones would have to fly ten times more often than the helicopter; in addition a spokesperson raised safety concerns.⁶³



Figure 3: A drone delivers food to an alpine hut

Source: ORF Salzburg⁶⁴

These examples suggest that there is either a sense of need or business opportunity from a practical point of view (to experiment with delivery by drones), or a demand felt in the logistics industry, not only in Austria, but also by several other postal services elsewhere.⁶⁵

⁶³ORF Salzburg 22.8.2017, salzburg.orf.at/news/stories/2861765/.

⁶⁴salzburg.orf.at/news/stories/2861539/.

⁶⁵techworld.com/picture-gallery/apps-wearables/best-uses-of-drones-in-business-3605145/.

5 Legal aspects of employing drones

5.1 Civilian drones in general

The legislative system surrounding drones is a remarkably complex matter on which various countries have various uptakes, approaches, and as a result different laws. While there are certain common elements, there is a large degree of variation, especially when we look at the situation worldwide, but even within the European Union.

Generally speaking, the regulation distinguishes between non-commercial (recreational) and commercial use.⁶⁶ Several criteria and conditions apply to each use and operation. The drones themselves have to be licensed by the European Aviation Safety Agency (EASA) if they weigh more than 150 kg, below that it is the national aviation agency, for instance Austro Control. If still lighter they may be regulated differently; in Austria, for instance, all drones lighter than 25 kg are licenced by Aeroclub (ÖAeC)⁶⁷, if the drones are not commercially used. The toy drones with less than 0.25 kg that fly no higher than 30 meters are usually not covered by the more strict rules. Beyond that the main distinction by the law is about whether or not the pilot is in eye contact with his/her drone. Without eye contact – which includes piloting with the help of a camera transmitting pictures taken from the drone ('first person view') – flights need to be individually allowed (for more details see Knyrim/Kern 2014). The current regulation, at least in Europe, does not cover autonomous unmanned aerial vehicles. In most legislative frameworks neither flying a drone with a camera⁶⁸ nor above a crowd of people is permitted unless with a special licence.

autonomous aerial vehicles are not covered by legislation in Europe and need therefore individual licences for each flight

Interestingly there are several legal concepts that are either not exactly defined or not defined at all, for instance airspace: above what height do we consider the space 'airspace', or up to what height is it a person's property? There are certain countries where it is not clearly defined whether the air over one's property is *their* property, therefore in many cases it is unclear whether one is entitled to claim rights for or against objects flying over their property or not.

This and various other parameters are not clear or exact, but would come afore in the case of the launch of wide-scale delivery services by drones.

⁶⁶ dronerules.eu/de/; for a short overview see also (ITA 2014).

⁶⁷ aeroclub.at.

⁶⁸ futurezone.at/digital-life/drohnen-fotografie-alle-fluege-muessen-genehmigt-werden/163.784.355.

5.2 Delivery drones in particular

<i>current laws do not allow delivery drones</i>	Obviously delivery drones do not belong to the category of lightweight flying objects (which their toy equivalents are) because they need to carry a load in addition to the equipment needed for autonomous flying (such as cameras and other sensors etc.). So delivery drones could only be employed under special conditions (e.g. license). For on-board cameras etc. one would need a special extra license given by the aeronautical authority. However, so far, autonomous drones do not exist in the law and are therefore currently not permitted for use in Austria. In addition, delivery drones would have to fly over people and urban areas, something which – under the current regime – can only be allowed by the authorities on a case-by-case basis, which is obviously not suitable for a business model for regular deliveries.
<i>need for new rules</i>	The legal framework would have to be adapted for delivery drones, for instance with an additional drone category with special rules. This means that there would be a need for regulation in order to enable mass deployment, especially when the delivery service by drones would be authorized in urban areas.
<i>the cross-border and international dimension</i>	Furthermore, more questions would arise when it comes to cross-border flights, similar to the big airplanes, for instance: Would one need also a license in the other country or does the home license suffice? Are there different rules in the other air territory? The European Union is currently developing a legal framework aiming at harmonizing the different national approaches. ⁶⁹
<i>examples of legislative initiatives</i>	Since the inception of the idea of delivery with drones, the United States was in the forefront of starting initiatives for the legislation of commercial drone activities for delivery services. At the same time, even recent as well as past initiatives were so far unsuccessful in reaching substantial progress. It would be interesting to know why a country which is usually at the forefront of enabling new technological ideas is in a legislative limbo. The question of speed and the question of success in making drone delivery services possible seem to depend on numerous factors that are deeply embedded in the particular country's socio-cultural and economic context and their legislative traditions. In a number of cases in Africa (Lesotho, Rwanda, Tanzania) and Central America (Haiti, Dominican Republic), it can be inferred that the legislation of delivery activities by drones were made possible in a faster way. It seems that for these countries it may have been the condition to receive aid and support by those organizations offering help in various humanitarian and emergency response

⁶⁹ See IDG News Service 20.06.2017, via [cio.com/article/3202386/vertical-industries/eu-wants-to-ease-commercial-drone-use-with-future-flight-rules.html](https://www.cio.com/article/3202386/vertical-industries/eu-wants-to-ease-commercial-drone-use-with-future-flight-rules.html); in 2015 the EASA European Aviation Safety Agency, easa.europa.eu made proposals for drones 'with restricted risk', see easa.europa.eu/download/ANPA-translations/205933_EASA_Summary%20of%20the%20ANPA_DE.pdf.

situations.⁷⁰

The vision of potential growth seems to drive legislative initiatives. In China, reasons of practicality enabled legislation in regions where it would otherwise be very difficult to manage logistics.⁷¹ This was also the case in Iceland where, additionally, population density and their socio-cultural background favoured drone delivery as an ideal solution.⁷² Various benefits and the potential of economic growth was probably also the reason driving legislative initiatives in Europe as well. In the summer of 2017 it has been reported that the European Commission aims to ease regulations on light-weight drones to enable logistics, inspection services and agricultural businesses.⁷³

*various legislative
initiatives world-wide...*

*... including at the EU
level*

⁷⁰See the following examples: Tanzania, flyzipline.com/uploads/Tanzania%20Announcement%20Press%20Release%20vFinal.pdf; money.cnn.com/2017/08/24/technology/east-africa-drones/index.html; Rwanda, qz.com/1003810/the-worlds-first-commercial-drone-delivery-operates-from-a-hill-in-rwanda/.

⁷¹Economic Times 07.11.2017, economictimes.indiatimes.com/news/international/business/alibabas-drones-deliver-packages-to-islands/articleshow/61545583.cms.

⁷²Bloomberg 23.08.2017, bloomberg.com/news/articles/2017-08-23/iceland-set-to-become-island-of-drone-deliveries.

⁷³IDG News Service 20.06.2017, via cio.com/article/3202386/vertical-industries/eu-wants-to-ease-commercial-drone-use-with-future-flight-rules.html.

6 Overview on potential impacts of employing drones for deliveries

In this chapter, we give an overview about the possible impacts of the introduction of commercial delivery drones (AAE/3AF 2015; Rao et al. 2016; from a TA perspective see Čas 2015; ITA 2014; Nentwich 2015; Krieger-Lamina/Nentwich 2016; Nentwich 2017; Moe 2013; POST 2014). In this overview study, only a preliminary analysis can be made, which should be explored in a follow-up study. The topics addressed here are: environmental risks (6.1), health risks (6.2), societal impacts and potential areas of conflict (6.3) and protection against misuse (6.4). Section 6.3 in particular is addressing the following aspects: the job-market, resilience of delivery systems, ethics, consumer behaviour, noise pollution, aesthetic derogation of airspace, protection of private sphere, and commercial use of the public good ground-level airspace.

Throughout this chapter we use two scenarios⁷⁴ in which we preliminarily test and assess the potential consequences of drone deliveries:

The basic scenario no. 1 (the so-called ‘pizza scenario’) on which we focus our examination on is the widespread delivery of all kinds of small goods (parcels) by drones, instead of (or in combination with) delivery vans and trucks. Within this scenario, drones would be fulfilling the function of the so-called “last mile delivery”: this means that various logistics providers would use the urban (and rural) airspace on a regular basis to deliver goods by drones to the consumer.

The alternative scenario no. 2 (the so-called ‘emergency scenario’) is less far-reaching: the delivery service by drones would only be a niche market, in which special goods, e.g. in the medical field, would be routinely transported between hospitals, pharmacies, and practitioners, or for other emergency purposes. Another potential niche market could be the regular supply of goods to remote areas, where no roads lead or there is no other connection in specific seasons.

Obviously most of the impacts discussed below are much aggravated in the case of scenario no. 1 as it is about ubiquitous and massive drone flights, whereas in scenario no. 2 flights will take place less frequently, perhaps only occasionally. We flag out those risks that are negligible if only scenario no. 2 would be implemented.

chapter overview

scenario 1: widespread delivery of all kinds of small goods

scenario 2: delivery of special goods only [niches]

⁷⁴Note that these ‘scenarios’ are not scenarios in a strict technical sense, i.e. not created using the scenario technique, but rather ad-hoc ‘narratives’ describing in general terms possible futures.

6.1 Environmental aspects

<i>threat to wildlife</i>	As drones would move in the environment (both natural and man-made) they pose potential risks for it. The first concern is the drones' effect on wildlife, and birds especially. When drones intrude into the habitat of animals, there would be a double risk: either the animals may be harmed, or they could be a threat to the effective operation of drones. Concerning the latter, such scenario has already been documented in Austria when eagles mistook drones for food. ⁷⁵ Regarding the former, there are concerns that due to the possibility of collision, the safety of birds could be at higher risk (see the related discussion with regard to windmills). Note that it is not only wildlife that could be affected. Depending on the territory the drones would be allowed to fly through, they could have an impact on various range of domesticated animals (pets and farm animals) as well.
<i>noise</i>	Even without collisions, the noise and frequent presence of these devices in the habitats of animals may be a stress for them, similar to nearby roads. To date, the effect of noise produced by drones onto wildlife has not been studied yet, but there are serious concerns that should be taken into consideration. Several factors play a role: the height drones would be required to fly, the territories they would be allowed to fly over, and the places where they would be allowed to land.
<i>debris</i>	A further possible environmental risk is debris. Either as a result of collision or in the case of forgotten or abandoned goods, the question of waste poses another series of challenges. The matter of responsibility and actual response comes afore: who would be responsible for cleaning up debris, and who would bear the cost of damage or compensation? This issue reminds us of wild dumps, for which it is difficult to assign responsibilities.
<i>energy consumption</i>	A further environmental aspect to be considered from a technology assessment perspective is energy consumption. Drones need electricity and although each individual flight would not consume much, the overall picture of a generalised drone delivery system may be different, in particular if compared with current deliveries with cars carrying many parcels at once. In a recent research article the authors conclude that for parcels up to 0.5 kg the energy balance is in favour of the drones (Stolaroff et al. 2018). However, the overall assessment may be different if the whole infrastructure is put in perspective (Redaktion 2018). Overall, a serious eco-balance (life-cycle assessment) is warranted, including among other factors the life cycle of the batteries needed.
<i>eco-balance needed</i>	

⁷⁵The Independent, 13.11.2015, [independent.co.uk/video/News/two-eagles-mistake-a-drone-for-food-in-austria-a6733351.html](https://www.independent.co.uk/video/News/two-eagles-mistake-a-drone-for-food-in-austria-a6733351.html).

6.2 Health and safety

There are two kinds of health risks resulting from accidents. First, malfunctions of the navigation system, in particular in bad atmospheric conditions, may lead to accidents. In particular in urban areas with a dense population collisions of drones with humans are possible and injuries are quite likely, as the rotors are sharp and a loaded drone weighs a few kilograms. As long as delivery drone systems are not in place and also depending on the scenario implemented, it is difficult to estimate the likelihood of accidents for now.

injuries because of collisions

Another potential health risk stems from the load. In the event of a crash of a drone carrying a dangerous good various unpleasant scenarios are imaginable. The definition what counts as dangerous would have to be refined; for instance one may ask whether blood samples of ill people, medical probes, or vaccines would be included, as they could potentially contaminate the environment or threaten people directly. Possibly the transport of dangerous goods could be banned altogether.

contamination with dangerous loads

6.3 Societal aspects and potential areas of conflict

With regard to societal aspects and conflict potential, the first wave of critique has already appeared in various forms on different platforms, and the first signs of resistance have already been articulated. For instance, in the US you can buy anti-drone guns to shoot them down if they trespass your private territory.⁷⁶ In the following, we give an overview of the most relevant areas in which concerns have been raised.

6.3.1 Labour market

A first area of concern is potential effects of this technology on the job-market (OECD 2015). The transport and logistics sector is personnel-intensive, as drivers who deliver the parcels in person are needed on the last mile. With the advent of 24/7 online shops, the market segment of delivery to the homes of the customers increased considerably⁷⁷, and so did the labour market for packet assemblers and for drivers of delivery vans. In the event of widespread employment of drones for the last mile, the latter part of the labour market would eventually shrink again.

the labour market for delivery services increased considerable with the diffusion of online shopping ...

... and may shrink again

⁷⁶Wired, 27.07.2017, [wired.com/story/watch-anti-drone-weapons-test/](https://www.wired.com/story/watch-anti-drone-weapons-test/); The Drive, 21.06.2017, [thedrive.com/aerial/11505/the-7-most-significant-anti-drone-weapons](https://www.thedrive.com/aerial/11505/the-7-most-significant-anti-drone-weapons).

⁷⁷Global online retail sales are growing and are estimated to reach 8.8% of total retail spending in 2018 as compared to 7.4% in 2016. In 2016 this meant 1.88 billion USD, which rose to 2.19 billion USD in 2017. By the end of 2018 this number is projected to be 2.48 billion USD. See [invespcro.com/blog/global-online-retail-spending-statistics-and-trends/](https://www.invespcro.com/blog/global-online-retail-spending-statistics-and-trends/).

<i>effects depending on delivery modes and scenarios</i>	<p>These effects very much depend on the concrete scenario and the delivery modes put in place. Obviously the labour market for drivers in the pharmaceutical sector is much smaller than the field of consumer goods. In case the drones would start from automated intermediate storage facilities, van drivers would be out of business in the longer run (except for the large and/or heavy parcels). In case the drones would start from the delivery vans, there is still a need for drivers – unless those vans eventually become autonomous themselves – but much less than hitherto, because using the drones for the last mile is supposedly much more time efficient: not only are drones faster than a human walking up the stairs, there could also be more drones starting from one van in parallel, which would lead to faster turnovers of the delivery vans with still only one driver.</p>
<i>economic estimations are split, but labour market in the transport sector is certainly under threat</i>	<p>We couldn't find any specific study about the last-mile delivery, but there are several studies that examined the process of digitalization and automatization in various job markets in different countries (EPTA 2016; Frey/Osborne 2013; Čas et al. 2017). The economists are split about the exact figures, but for some sectors they predict huge job losses, and the transport sector in general (taxi drivers, lorry drivers etc.) is a case in point. Further research is needed.</p>
<i>the societal importance of jobs for unskilled labour</i>	<p>It is important to acknowledge that mundane tasks, which can be carried out by unskilled workers, serve as a social safety-net for those individuals who lack formation and specific training, but who need a job they can fulfil without further qualifications, at least for an interim period.⁷⁸ As the process of automatization would result in less need for human workers, the group of unskilled workers could suffer most.⁷⁹</p> <p>The threat of delivery by drones to the job market is also a recurrent topic in the media. The majority of the articles and debates are centred on economic aspects of automatizing delivery. In particular the threat to unskilled labour is being discussed frequently, as are distributional issues.⁸⁰</p>

6.3.2 Resilience/redundancy of the delivery system

When the launch of any infrastructural service is under consideration, it is advisable not only to look at the potential economic advantages (like to opening up of new markets), but also to examine how resilient the overall system would be.

⁷⁸ Especially in the case of immigrants or in case of job losses and a need for fast employment to secure income.

⁷⁹ Forbes, 17.4.2017, forbes.com/sites/quora/2017/04/17/should-package-delivery-be-automated-with-drones-a-look-at-the-pros-and-cons/#3ccf82681bc9.

⁸⁰ Forbes, 17.4.2017, forbes.com/sites/quora/2017/04/17/should-package-delivery-be-automated-with-drones-a-look-at-the-pros-and-cons/#3ccf82681bc9; Goldman Sachs, 2016, goldmansachs.com/our-thinking/technology-driving-innovation/drones/; Reuters, 21.03.2017, reuters.com/article/us-usa-drones/u-s-commercial-drone-use-to-expand-tenfold-by-2021-government-agency-idUSKBN16S2NM.

There are certain circumstances when drones cannot fly safely, for instance in case of strong wind or icy rain or thick fog (just like the big airplanes). This means that in a scenario in which the existing van-based infrastructure is replaced to a large extent with delivery drones, the drone-based system would not be able to deliver. We may assume that the delivery firms would not keep the van pool “just in case”. The question then is, whether this is acceptable or would we need alternatives?

dependency on drones that cannot fly at all times may be a source of risk

For our general scenario no. 1, a temporary delivery stop may be acceptable (but needs further analysis), but what about scenario no. 2 in which the medical sector counts on daily delivery service by drones? This vulnerability of an important part of our life-saving infrastructure has to be avoided. In this case, alternative delivery services need to be on call at all times.

6.3.3 Ethics

For the scenario of an impending and non-avoidable accident, what behaviour will be pre-programmed in the software of drones? Similar to algorithms that are discussed with regard to other autonomous vehicles, e.g. passenger cars, there are a number of decisions to be made, prior to events, which become operative in the time of split-seconds. For autonomous cars, these tricky issues have already seen extensive discussions among ethicists and technologists (Maurer et al. 2015), a respective discussion for drones is still missing (see, however, Luppiciini/So 2016).

pre-programmed algorithms take ethical decisions

In one often quoted scenario in which damage seems unavoidable, there would be at least three options what the car/the drone could do: i. hit two adults with a great possibility of heavily injuring them; ii. hit a child with a great possibility of heavy injuries; or iii. somehow manage to avoid crashing into the two formerly mentioned, but instead crashing down and destroying itself and its parcel which could have saved someone else's life (e.g. the parcel containing a human organ for transplant). It is an open and difficult ethical question what decision to take. All this has to be decided and programmed beforehand. Is it the programmer who decides in advance, is it the drone manufacturer, the delivery service enterprise, the sender or the recipient of the parcel, or rather the society at large and hence the legislator? How would we – whatever decision is taken – oversee the implementation of these decisions? We may easily assume that answering all these questions is not easy (Krieger-Lamina/Nentwich 2016). Note that for the drone to be able to take whatever decision, permanent surveillance and analysis of the environment is a precondition.

the ethical dilemma of autonomous cars revisited

By the way, this ethical dilemma is also present in the case of a delivery service restricted to emergency parcels only (our scenario no. 2). If the fact that it is an emergency would be taken into consideration for that difficult appreciation, we still face the question, what counts as an emergency situation and what doesn't? We may assume that the delivery of living organs may safely be considered an emergency, what about other cases,

what counts as an emergency?

like the transfer of medical probes and blood samples?

*'drones divide': a service
not available for
everyone?*

In our scenario no. 2 we may even go one step further: Would delivery services by drones in urban settings be an exclusive right of medical entities? If so, what counts as a medical entity? Would we strictly regulate who is allowed to fly and who is not, and how would we react if these privileges would be misused? If there is strict control, time restrictions, flight corridors etc., then this kind of service would be a scarce commodity. Usually this would lead to higher prices. For instance, a certain patient's blood could be given priority because she or he paid extra fees just to have their results faster. This is a typical technology assessment reasoning that we could term 'drones' divide': in one scenario only the rich may afford it (but still use the common good airspace) and it may lead to an additional difference in the quality of healthcare that patients receive. The same set of questions may also be asked for other services.

6.3.4 Consumer behaviour

*drones have the
potential to change
consumer behaviour*

What consumers buy, how and when they buy, how they pay, what their expectations are, all this varies geographically and is changing constantly, not least because industry and commerce try to influence their behaviour, even creating previously unknown needs. Recently the advent of online shopping with 24/7 availability instead of fixed opening hours and with no need to leave home, neither for the search & order activity nor for the delivery, has the potential to enduringly change consumer behaviour (Lee et al. 2016). And so have drones.

*instant delivery as an
induced consumer need*

Previously, mail-order firms, now web-shops delivered within a couple of days, and even expensive fast-track delivery usually takes a day to arrive. The promise of drone delivery is to reduce this to an hour or less. We may rightfully ask whether this would satisfy an already existing need or rather a new one is about to be created. Whatever the answer, it seems safe to predict that this development would speed up the whole consumer market and be an additional strain on location-based shops. Actually, even today we can observe a fierce competition between the latter and the online shops with their usually much broader portfolio, driving many non-virtual shops out of business (Bruckner 2017). This competition will certainly increase and may change the landscape of shopping outlets considerably. At the end, the consumer may be left with less local choices, but a vast online offer, perhaps with much less competitors on the market.

*novel consumer
protection issues*

This new world of commerce – online and very prompt delivery (by drones) – could be assessed from both psychological and legal perspectives: this new environment would lead to almost instant gratification, and the promise of the 'fulfilment of all wishes' in a very short time. While on the one hand this is certainly welcomed by many, it may on the other hand fuel problems with binge buying, increasing levels of consumer debt, the danger of excessive indebtedness, and finally insolvency. From the point of view of consumer protection, legislating this is certainly an issue.

Note that the right to step back from an online purchase is psychologically speaking even more reduced (usually two weeks from the time of order) in case the delivery time is negligible; hence the opportunity to ‘think twice’ is diminished.

6.3.5 Noise pollution

It is not only the wildlife (see above 6.1) that is affected by noise pollution, so are also humans. Just like those who live nearby high-traffic roads or airports, those who would live directly under the delivery air-corridors where drones fly regularly could suffer the disadvantages of noise pollution as well. Note that at in our scenario no. 1 massive drone traffic would develop over time. While a single drone with eight electrical mini-engines is not very noisy (unless it is very near), many of them at the same time certainly would. Even if we assume that later generations of drones would be more silent, there is certainly a limit to further improvements because the airflow around the many rotors cannot be avoided – similarly to the noise produced by car tires which is, together with the airflow around the autobody, above a certain speed louder than that of the engine and, hence, even the most silent electrical engines cannot produce silent e-cars.

Apart from highly used corridors, the expected delivery manoeuvres close to the customers, in particular in a densely populated urban area, are not negligible, at least not by those more noise-sensitive. Only the noise produced by the air traffic expected in scenario no. 2 would not be a of substantial concern.

noise in densely populated areas may be a problem

So in scenario no. 1 we may assume that noise could be a problem which if unsolved may lead to resistance in the population. The question then is how the society would decide where drones would be allowed to fly to reduce the noise problem. No-fly zones may be part of the solution, as would be corridors high above street level and away from buildings, but can there be any solution for the last mile, i.e. the surroundings of the prospective landing spots close to the customers? These are open questions that cannot be answered without an informed public debate; we shall come back to this in the concluding chapter.

6.3.6 Aesthetic derogation of airspace

Similarly to powerlines, windmills and skyscrapers in the past, the aesthetic appearance of drones swarming the lower airspace can be expected to be questioned by parts of the population.



Figure 4: A sky full of delivery drones

Credit: RikoBest/Shutterstock.com

*commercial use of the
common good 'ground-
level airspace'*

At first this sounds like a luxury problem and indeed our societies have accepted a lot of similar compromises in the past: there are less and less untouched natural landscapes, and in urban areas the utilization of the ground level for traffic and all sorts of public furniture and appliances is standard. Furthermore opinions about the aesthetic value of all kinds of buildings and infrastructure will always remain split. However, one may argue – and we assume it would be put on the table if discussed widely – that using massively the so far empty airspace could be considered a new and qualitatively different step in exploiting a common good.

Note that at least in our scenario no. 1 drones would fly mainly for commercial purposes in the private interest, whereas the use of the ground level is a shared space for commercial, public and private activities. This raises the additional question whether, if allowed at all, would the commercial enterprises be required to pay for the use of the space? There are many examples from the past, not least from the traffic sector, such as road charges, motor vehicle taxes, and the famous Austrian 'Luftsteuer' (air tax)⁸¹, which is due if one uses public ground for private purposes, e.g. with billboards extending into the air above sidewalks (see section 7.3).

6.3.7 Protection of the private sphere

*drones potentially
threaten privacy*

In case packet delivery by drones would become a (legally) accepted service, this technology has the potential to affect and possibly conflict with the private sphere. Today even without large numbers of drones in the air, the issue is already tabled. In particular many toy drones are equipped with cameras (which is actually not allowed under most regimes unless you have a specific license), and so neighbours are alerted when drones fly over one's ground or approach one's balcony. There are numerous ar-

⁸¹ Gebrauchsabgabengesetz
ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=LrWG&Gesetzesnummer=20000131.

ticles in the popular media addressing the issue⁸² and several firms offer anti-drone devices for self-helped 'law enforcement' purposes.⁸³

Even though taking pictures, filming or audio surveillance is not among the main functions of delivery drones, these are however needed to sense where they are going (and constantly survey their environment) and therefore are necessarily equipped with technology that can 'see' to orient them (see section 3.1).⁸⁴ The data generated by these sensors during the flight could be immediately deleted. However, it may be the case that they would be legally required to keep a record of a flight, in case they need to prove that they were not the cause of damage or have obeyed all flying rules. Such a scenario seems likely as it parallels similar developments in other areas, in particular the black boxes of airplanes, in the near future also of cars, as well as the trip-recorders of trucks. This means that video material coupled with location data and time stamps would be generated and stored. All this data can be quite sensitive if people are on the videos or can be indirectly related to it. Also birds' eyes views from private properties may be sensitive, as are public buildings (e.g. the parliament building) or military facilities.

We assume that the privacy issue should not be underestimated. In section 7.2 we shall therefore come back to this topic.

challenge: autonomous drones technically need a variety of sensors ...

... and the resulting data may be required to be stored

6.4 Protection against misuse

With all new technologies comes the potential of misuse. The dissemination of delivery by drones is expected to be no different (AAE/3AF 2015, p. 49f). Acts of misuse could be theft of the drones' loads, vandalism and so-called 'spoofing', i.e. electronic hijacking by overtaking control of the drone remotely or sending false GPS signals. Furthermore drones could be used by criminals to transport illegal goods, e.g. drugs, or to deliver something (e.g. weapons) to prison inmates.⁸⁵ Finally terrorists may load bombs onto drones or simply use drones to spy out potential targets (e.g.

drones can be a target of criminals or used for a variety of illegal purposes

⁸²Consumer Reports, 10.02.2016, consumerreports.org/electronics/drone-privacy-is-anyone-in-charge/; The Next Web, 24.08.2017, thenextweb.com/tech/2017/08/24/amazon-patent-details-the-scary-future-of-drone-delivery/; Recode, 15.03.2017, recode.net/2017/3/15/14934050/federal-privacy-laws-spying-drones-senate-hearing.

⁸³E.g. special rifles, 20min.ch/digital/news/story/Drohnen-Gewehr-holt-Gadgets-vom-Himmel-25911389?redirect=mobi&nocache=0.6997041974682361 and <http://www.spiegel.de/netzwelt/gadgets/battelle-dronedefender-das-anti-drohnen-gewehr-a-1058093.html> and spiegel.de/video/dronedefender-gewehr-beschiesst-drohnen-mit-radiowellen-video-1617446.html. Another option seems to be to train birds (falcons or eagles) to hunt drones, futurezone.at/digital-life/niederlaendische-polizei-trainiert-adler-fuer-drohnenjagd/178.424.561.

⁸⁴This is also true for remote controlled drones, not only for autonomous ones, as the pilot needs the camera to be able to fly at distance.

⁸⁵tagesspiegel.de/berlin/gefaengnis-in-berlin-moabit-drogen-per-drohne-in-den-knast/19931882.html.

	nuclear plants ⁸⁶). These criminal purposes become easier to execute the denser the air traffic is, because the prospective high numbers of drones may be good to hide and go undiscovered. Also the drone itself could be the weapon if flown into a crowd of people or highway traffic.
<i>knowledge about the rules for drones is generally low</i>	Even non-criminals, just ordinary citizens often employ drones not correctly, e.g. when flying over crowds of people or with a camera attached; obviously, the general knowledge of the applicable legal rules is very low or it is imply indifference or neglect (Pfluger 2017). ⁸⁷ To counteract, the Austrian authorities recently launched websites targeting the ordinary user with information about the applicable rules. ⁸⁸
<i>how could authorities counteract misuse?</i>	So we need to ask the question how authorities could prevent acts of misuse and criminal activities. To date, the legislation does not give the police the means to effectively counteract and penalize misuse. We shall come back in section 7.4 what options the legislator would have to improve the situation (e.g. electronic license plates).

⁸⁶ [spiegel.de/wissenschaft/technik/drohnen-ueber-akw-frankreich-raetselt-ueber-terror-gefahr-a-1005559.html](https://www.spiegel.de/wissenschaft/technik/drohnen-ueber-akw-frankreich-raetselt-ueber-terror-gefahr-a-1005559.html).

⁸⁷ See also [welt.de/regionales/bayern/article147407964/Viele-Hobbypiloten-kennen-die-Vorschriften-nicht.html](https://www.welt.de/regionales/bayern/article147407964/Viele-Hobbypiloten-kennen-die-Vorschriften-nicht.html).

⁸⁸ See austrocontrol.at and bmvit.gv.at/verkehr/luftfahrt/drohnen/.

7 Potential need for regulation

Based on our preliminary analysis of possible societal impacts, we are now in a position to assess whether or not it would be necessary to regulate this emerging market for delivery of goods by drones.

A general problem with new technologies and in particular with rapid developments such as in this case, regulation either lags behind and would need to constantly adapt to new technological options or it is a formal barrier to innovation, as is the case at the moment (remember that under the present legal framework autonomous drones cannot be licensed at all). Furthermore this particular field of activity, like all transport-related activities, has an international dimension as flying objects may easily transgress international borders and fly into territories with another legal regime.

legislation is lagging behind technology development and commercial aspirations

international dimension

In this chapter we give a first overview of legal fields touched upon by delivery drones, in particular we look at open issues in air traffic laws (7.1), consumer and privacy protection (7.2), tax law (7.3), and measures for law enforcement (7.4).

7.1 Air traffic laws

As mentioned earlier (5.2), to date, autonomous drones are not permitted by the law in Austria and many other countries (see AAE/3AF 2015, p. 52ff, on the regulatory discussion). So if society and the legislator wish to allow for delivery drones operations – which remains an open question, see our conclusions in chapter 8 – the option of not only remotely controlled, but also autonomously flying drones need to be legislated in the first place. Together with this new option, both technical requirements for licensing delivery drones, the service enterprises, and specific air traffic rules would need to be worked out:

To begin with, the drones themselves would need to be licensed and undergo special test processes to check safety and performance, weight, accuracy of geo-positioning and sense & avoid systems, type of engine (electrical only or also combustion engines), etc. Special rules may apply to drones with special purposes, like transporting dangerous goods. A further aspect is, what data a black-box, if it will be mandatory, should include, how long this data would be stored etc.

technical licensing of the drones

In addition, it is most likely that enterprises offering delivery services would be required to fulfil certain conditions and would have to acquire specific licenses. This may also encompass a data protection and privacy assessment. The licensing could be handled according to the current system, i.e. by the respective flight control authority and/or transport ministry.

licensing service providers

<i>no-fly zones, corridors, geo-fencing</i>	In particular in scenario no. 1 the air space would become densely populated with massive and regular drone traffic. Similar to the traffic on the streets traffic rules are needed to avoid chaos. Air traffic rules would have to include speed limits, flight heights, minimum distance to other objects and in particular humans and animals, drone identification, emergency procedures, etc. In addition, it seems advisable to think about air corridors where drones would be allowed to fly and 'no-fly zones' where they are not. These no-fly zones would be flagged out in a dynamic database accessed by the drones during flight (or shortly before taking off) and would tie to the more and more frequently mentioned practice of geo-fencing. Special cases are temporary or locally established no-fly zones around helicopters or in an emergency area, but geo-fencing could be aimed to serve both security and privacy purposes. These rules would take into account the differences in the urban and rural environments.
<i>ground-level air space surveillance body</i>	It is an open question whether we would need, at least in scenario no. 1, a specific ground-level air space surveillance body (like air traffic control that exists for airplanes) or whether an automated or even decentralised system of mutual traffic control is conceivable. The latter would mean that a protocol needs to be established for drones coordinating among themselves in order avoid collisions. This may also include a functional hierarchy to allow for priority flights (e.g. a pizza delivering drone would give way to a drone that carries medical samples).
<i>priority flights?</i>	
<i>dangerous goods</i>	Further regulatory decisions would need to be made regarding the delivery of dangerous goods, and for security reasons. Apart from specific technical safety requirements of the drone itself, it may or may not be allowed to fly dangerous goods at all or only under specific circumstances.

7.2 Consumer and privacy protection

<i>withdrawal from contract</i>	Although this is primarily an issue connected to online shopping in general, we observed earlier (6.3.4) that ubiquitous delivery by drones would speed up the fulfilment of consumer contracts. In this context the legislator may reconsider the right of withdrawal, that is, under what conditions and in what timeframe could a consumer cancel an order without further obligations.
<i>insurance issues</i>	Furthermore the rules of liability would possibly need amendment when it comes to the loss or damage of a good, either during the flight (for instance in case the customer ordered despite heavy rain) or during the delivery process (who is responsible for the correct functioning of the landing platform or window-attached basket?). Would insurance be obligatory, for the drone or for the delivered good, and who would have to pay the fees? (AAE/3AF 2015, p. 49)
<i>privacy protection</i>	Last but not least, as already discussed above in section 6.3.7, existing data and privacy protection would need to be adapted to the new technical possibilities (AAE/3AF 2015, p. 48), including black-box recordings.

7.3 Tax law

It is conceivable that states would consider drone flights a new object of taxation. The reasoning behind would probably be that drone operators use the common good near-ground airspace for non-public purposes – similar to car owners using the streets and people putting out an overhead billboard.

compensation for using a common good?

7.4 Law enforcement

Law enforcement with regard to the current air traffic is complex but relatively easy with a great, but still limited number of licensed airplanes and helicopters, with a limited number of operators, and with any particular airborne airplane on one or more radar screens, and even stand-by interceptor planes to enforce national no-fly zones. In addition, almost everything that boards an aircraft has undergone a safety check. In our scenario no. 1, by contrast, this would be different in many respects: drones are very small; many, many more flying objects would be airborne at any given moment; radar would partly not detect drones flying near-ground and between buildings and in valleys; and there would be many more operators. In some respect overseeing drone traffic would be similar to car traffic on the ground with essentially no possibility of full surveillance.

preventing misuse is particularly challenging when it comes to drones

As we have seen, however, the potential for drone misuse is non-negligible (see 6.4). So a future regime for delivery drones needs to take these challenges into account. Whatever the institutional solution would be (the traffic police or a special authority entrusted to supervise), these authorities would need to be given the respective resources to fulfil this demanding task.

One possible option would be to establish a remote identification system. This would include compulsory registration of every drone and its permanent identification by a radio signal and would further allow the authorities – and perhaps also the private citizen⁸⁹ – to identify every drone in sight remotely. The authority may then have access to a database with the current details of each flight (provider, route, load), like with truck, cargo planes and container ships. Special devices could be developed (similar to radar guns in use to control car speeds) that would receive the identification data.

remote identification system?

A further option, which would have an equally deterrent effect for potential misusers (not criminals or terrorists though), would be a mandatory black box on board of each drone (similar to those on airplanes), i.e. a specially protected and tamper-proof storage device that stores flight data for immediate (i.e. even during the flight with the help of the above mentioned

mandatory black box?

⁸⁹The wish of private persons may be considered legitimate to know who is flying over one's garden or passes-by one's window for the third time in ten minutes.

*permanent near-ground
air traffic control?*

special radar gun) or at least control after a specific flight.

Technically it may further on be possible to let drones be connected to the general or a specific mobile communications network during flight even permanently and let them send the data constantly for automated tracing and supervision of all rules. However, the problem of non-compliant drones would persist.

8 Conclusion: Debate now!

As we have seen, there are a lot of open questions regarding the commercial use of drones. Questions concern the technical, legislative as well as societal aspects, safety, and environmental risks.

numerous open questions

The answers to these salient questions will differ when we distinguish between possible implementation scenarios as outlined in the introduction to chapter 6. In the case of the “pizza scenario” (1) with ubiquitous delivery drones being part of our everyday reality the impacts on our societies are obviously more severe than in the restrictive “emergency scenario” (2) with deliveries only in special cases.

While realising scenario 2 still needs quite some preparation, both technically and in legal terms, establishing such niche markets would be probably without wider opposition. By contrast, scenario 1 not only requires much more sophisticated infrastructure and rules, but also raises some potentially controversial questions.

‘pizza scenario’ (no. 2) is highly controversial

From a technology assessment perspective these questions cannot be answered without in-depth interdisciplinary examination. The present overview study only provides a preliminary stock-taking of the issues involved; it is to be expected that some of the points raised in this short report are less controversial or turn out to be negligible, but there may even be more salient issues to find out.

in-depth and interdisciplinary TA research needed

Furthermore many of the issues detected are value-laden and the technology touches upon the private lives of a large number of individuals. To give a few examples: the relationship between economic interests and the protection of wildlife is not an obvious one; the question of the aesthetic consequences of mass-droning is difficult to answer in a top-down manner; noise is another issue where society constantly searches for compromises.

a technology close to everyone’s private life

As the technologies are almost mature and many commercial entities wait in the wings, it would be high time to open up a debate now, and examine the possible chances and risks of such a service. Our recommendation is to conduct a participatory technology assessment study, that is, a combination of expert-, stakeholder- and citizen-oriented research. The study would try to give an answer to this question: “Which of the above scenarios (or any other that may come up) do we want as a society, and under what conditions?” Such a study would have four elements:

participatory TA is recommended

1. A detailed examination of the technical, regulatory and economic framework as well as the risk issues (this would be an enriched, extended and updated version of the present report);
2. An informed debate with stakeholders (drone manufacturers, delivery service providers, airspace authorities, police, NGOs from the fields of consumer protection and environmental protection, etc.);
3. An informed debate with citizens; lay participation would be particularly

work packages of the TA process proposed

rewarding in order to bring in everyday knowledge and values from non-experts;

4. A concluding, policy-oriented analytical part aiming at proposing policy options.

*the issue is timely for
anticipatory governance
and public debate*

On a final note, the authors of this report are convinced that the issue is timely for carrying out such an encompassing study now and for inducing a public debate about it. Today the technology is not yet fixed and the commercial actors have not yet invested heavily in their business models; in other words: today, anticipatory governance aiming at shaping the technological and economic path is still an efficient and effective option.

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LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 075

Date Authorised for Publication: 27 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT

Personal Details:

Name:	
Postal Address:	
Phone:	
Email: (if applicable)	

Optional:

How long you have lived in the area:	
Occupation:	
Any other background information:	

I would like to comment on the following terms of reference:

- 1) The decision to base the trials of the technology in the ACT and surrounding region

I find it puzzling that the Drone Trial was allowed (with exemptions given by CASA) amidst my peaceful and quiet area as I understand that the Murrumbidgee Corridor is a protected area for native birds and wildlife (I even had a wombat that used to forage in my front garden and leave its calling card (square dung). Not to mention the large number of kangaroos including a mother and young joey that became so tame that I could hose them down from just inside my back gate on a hot summer's night and also this freshened up the grass in that spot so they used to graze there on their own every evening after dusk.

2) The economic benefit of drone delivery technology being tested in the ACT including;

a. The investment that has been brought in to the Territory

I do not believe that any investment has been brought into the ACT. If Project Wing had initially charged a delivery fee I doubt that many people would have used the service.

b. The number of jobs that have been created as part of the trial

I believe that only the staff directly employed by Project Wing have been created and in fact I am not happy that well established take away restaurants that I used from time to time that deliver to Bonython would eventually be adversely affected by drones delivering coffee, pizza, burritos etc and I prefer to support local businesses not a company that is owned by a huge multinational company (Google) masquerading as a service to benefit not only Bonython residents but eventually to spread all over Australia and probably many other countries if permitted. All of this is totally unacceptable to me.

c. The extent of collaboration with local industry and academic institutions

I do not believe that the perceived collaboration with local industry and or academic institutions

3) The extent of regulatory oversight of drone technology at various levels of government including;

a. Local authorities such as EPA, Worksafe, Access Canberra

I do not believe there has been sufficient regulatory oversight of drone technology at any level.

b. Commonwealth agencies such as Air Services Australia, Civil Aviation Safety Authority

I have tried to contact CASA a couple of times via email only to be given a 'standard' reply that did not address sufficiently the issues I raised.

4) The extent of any environmental impact as a result of trialling drone delivery technology on;

a. Residents within the trial area

I have found the noise and presence of the drones that fly directly over my home intrusive and a safety risk and I have been distracted as I drive out of my own drive way by the sound and possible close encounter with a drone delivering someone's morning coffee and perhaps a cake from Baker's Delight or a pizza as early as 8.10 am when I am trying to have a quiet relaxing morning and not wake up to the loud sound of a drone overhead not once but twice as it flies back to its base to deliver yet another order.

b. Native wildlife

I frequently go to Stranger Pond with and without my young granddaughters to watch and listen to the bird life. The Swan family disappeared once the drones started flying. Also the 2 Pelicans that used to swim and fish in Stranger Pond were no longer seen. The smaller birds (like the pair of white ducks, and some brown ducks and other water birds) no longer frequented the Pond which I believe prior to the drones flying was their permanent home. The kangaroos disappeared from around the suburb and particularly out the back of my rear picket fence which once was populated by many kangaroos grazing every afternoon around dusk.

c. Domestic animals

Although I do not own any pets at the moment I have notice that the dogs that are in my complex start barking loudly and constantly when the drones are flying. My neighbours have told me that they have to take their pets inside when the drones are flying because they are disturbed and frightened by the threat of a large flying object that they are not familiar with.

5) Ways to improve the use of drone delivery technology within the ACT

The only way I can see to improve the use of drone delivery technology in the ACT is for the drones to be banned from flying at all on a permanent basis.

6) Any other relevant matter

I have privacy concerns as well about what information is conveyed back to the USA (ie Google) and in fact what information is stored and what information is 'deleted'. While the drones were flying and particularly when they increased their flying hours and days but chose not to fly on Sundays as a result (probably to give residents some respite from the noise, annoyance and emotional and mental health problems that some residents of Bonython suffered) I still was constantly wondering if I did decide to have a rest how long would it be before the noise of a drone flying directly over my home and back woke me up. Alternatively when I wanted to sleep in I was constantly woken up by the loud noise of the drones despite having an exterior roller shutter on my large full length bedroom window which is at the back of my home facing the Murrumbidgee Corridor.

I bought my home because it was in a quiet and peaceful setting walking distance to Stranger Pond and wildlife and native birds and Stranger Pond was nearby and I could walk to it for recreation and pleasure.

(Thank you message)

Signature or name



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 076

Date Authorised for Publication: 27 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	██████████
Postal Address:	██████████ ██████████
Phone:	██████████
Email: (if applicable)	██████████████████

Optional:

How long you have lived in the area:	██
Occupation:	██████
Any other background information:	██ ██

Firstly I will provide some background to myself so my comments made in the following document will be in context.

I am a retired police officer who retired in July 2018 after 38 years in the AFP with over 20 years working in the ACT. I served for 19 years as a Sergeant and finished my career working in the ACT Communications Unit at the Winchester Centre. I also worked both part-time and full time as a police bomb technician for more than 35 years, a qualified remote systems operator using four different systems and was a qualified service technician responsible for the maintenance, repair and modification of the remote systems in use in the AFP.

I decided to become a drone operator prior to leaving the AFP as I saw it as a logical extension to the operation of the remote positioning systems I had used in the AFP.

I qualified as a drone operator in May 2018 and have logged in excess of 200 flights on two different types of commercial and semi commercial drones and currently operate four hexacopter drones (Yuneec Typhoon H x 2 and Yuneec H520 x 2). I am currently building a large fixed wing airframe with the view to eventually operating it in BVLOS (Beyond Visual Line of Sight) operations in remote areas.

I wish to advise that I do not want my personal details made public.

I would like to comment on the following terms of reference:

1) The decision to base the trials of the technology in the ACT and surrounding region;

I believe that the decision to conduct the trial was based on a very limited, somewhat selective information from the drone operator and without a proper understanding of the regulatory environment, or lack thereof that relates to the uses of drone, commercial or otherwise. The government reaction seems to have been similar to the handling of the arrival of Uber into the ACT. A huge multinational has said that they want to trial their business model and the government has said go ahead without having applied the proper due diligence to the proposal and without engaging the various communities (residential, scientific and regulatory) properly to determine what the support, issues, benefits and problems might be.

2) The economic benefit of drone delivery technology being tested in the ACT including;

I believe that any claims that the technology will bring significant investment to the ACT must be considered carefully and may be exaggerated. Based on my experience with remote positioning systems and their support I believe that the overall investment by Wings and their parent company in the ACT will be minimal. Their system has the ability to operate over the whole of the ACT from a single operations base. The number of personnel required to operate the airframes is minimal due to the highly automated nature of the systems. The maintenance and repair of the airframes would be restricted to a similarly small number of personnel locally because the actual systems are quite reliable and generally considered to be replacement rather than repairable items. The modest operational and support requirements for Wing drones means that there is unlikely to be significant local investment to support the business.

A warehousing operations hub would require a large but not significant investment in the ACT however the flow on effect of that investment is likely to be a reduction in investment in the ACT by other companies as Wing takes their market share. The unfortunate flow on would be that more people are likely to become unemployed as a result of the technology than are likely to be employed by the technology.

My concern is that the business model of the company seems to be to try and manufacture a delivery business requirement that has not previously existed so as to allow it to establish a toe-hold in the ACT. Having done this the business will then expand its business model to target all suburban courier deliveries for small packages. Small packages currently are a major component of the business revenue for ACT courier drivers. Approval for drone deliveries for suburban areas will impact negatively on courier businesses resulting in the services being less economically viable and causing drivers to lose their jobs. I believe that the negative impact on the revenue of existing businesses will result in a loss of investment in the ACT by courier businesses.

3) The extent of regulatory oversight of drone technology at various levels of government including;

As a commercial drone pilot I am well aware that the regulatory framework relating to drones is problematic. Although drones are defined under the Air Navigation Act and Regulations as aircraft there is little ability for the regulatory authorities to deal with drones or their operators unless there is an incident where the airframe is involved in an accident that results in significant damage or reportable injuries to a person and the drone, or significant parts of it are recovered at the scene.

Police regularly receive complaints about unsafe or unlawful use of drones or recoveries of lost drones that have experienced a “Fly away” (the operator experiences a loss of communication with the drone for various reasons, cannot regain control and it fly’s away, eventually automatically landing itself when the battery power reaches a critical level). Unfortunately in all of these instances the Police are unable to assist as they have neither the legal authority to investigate the complaints (CASA and ASA are the regulators) nor have they the ability to refer to a registration system for drones that would allow them to identify the operator of a lost airframe.

Registration for drones is currently not required so if a drone is involved in a serious incident the only recourse authorities have if the pilot does not self-report, or is not able to be identified by others involved in the incident the authorities must turn to the manufacturer to see if they can obtain the owners details from the warranty registrations for the airframe. This can only happen if identifiable part numbers are recovered from the drone involved and can be linked to an owner by the manufacturer.

If the current operator has never registered the for warranty purposes, or they have purchased it second-hand from someone else then the manufacturer will not be able to provide the current owner details.

Proposed registration and licencing costs for Australia will also provide an unfair advantage to overseas operators conducting in this country, such as Wing. The proposed registration framework suggests that Australian commercial operators will required to pay between \$100 and \$160 per drone per year. It has also proposed that drone operators who have their airframes registered in another country will have that registration recognised when they operate in this country. This in in line with commercial aircraft requirements. Commercial operators from the USA are required to pay \$5 per drone every three years.

Whilst licencing requirements are in place for commercial operators and there is consideration to extending the requirements to recreational pilots. The proposal state that the knowledge requirements for recreational users will be very limited.

AS a side comment I would also suggest that the knowledge requirements for a commercial pilot are not as expansive as they should be.

There is also the issue of airspace use. The Wing drones are operating over suburban areas without fixed flight paths or the need to file flight plans that are accessible by other drone users. Other users are / will be totally unaware of the presence of a Wing drone in their own area of operations until they either hear the drone approaching or they see the drone flying in to their area of operations. The Wing drones do not operate under Visual Line of Sight requirements and therefore do not have a pilot in control who can see the drone, the airspace around it and take immediate evasive action if the airframe flies into dangerous proximity of another drone. The business model that the Wing group takes seems to rely on other operators seeing their drone and getting out of its way, a sort of “all care but no responsibility approach”.

4) The extent of any environmental impact as a result of trialling drone delivery technology on;

As a drone operator I am very much aware of the impact of drones on people and fauna in an area of operations.

Impacts on People:

The impact on the drones on people is twofold. Firstly the noise factor. As explained the design as it stands is noisy. Large propellers driven by slower turning, more powerful motors may make the drones less intrusive.

Noise:

All noticeable noise from aircraft whether they be drones or larger aircraft, comes from the propulsions / lift systems involved in the operation of the aircraft.

Current generation rotary drones such as the DJI Phantom, Mavic and the Yuneec Typhoon and H520's are relatively quiet drones. Rotary drones, like other rotary winged aircraft are generally quieter when they are moving at speed. This is because the propellers generate lift from both the thrust of the propeller but also the aerodynamic flows across the propellers as the aircraft moves through the air. When the aircraft are hovering they have no movement generated lift and must rely purely on that generated by the propellers themselves. Rotary drone manufacturers realise that they have to displace a specific amount of air to allow a drone to fly efficiently. The result is that they use (in very generalised terms) two approaches to generate the required amount of lift. The first option is to use small motors and small propellers that spin extremely quickly. The second is to use larger, more powerful motors with large propellers that spin significantly more slowly than the small units.

The smaller propellers have tips that can travel at speeds that are extremely high and consequently generate a significant amount of noise, generally high pitched. Small drones in the sub 200 grams range are generally a good example of this problem as they are very noisy.

The large propellers used on drone such as the Phantoms and the H520's produce significantly much less noise than the small drones and at a lower, less invasive pitch than the small drones.

The Wing aircraft use small metal propellers for transitioning to and from the hover and the actual hover whilst delivering the package. The configuration, by design is noisy.

Proximity to persons not involved in the operation of the drone.

The second consideration is that the operator is being allowed to operate much closer to persons than any other drone. Drones are generally not allowed within 30m (horizontally or vertically) of a person. Commercial operators may operate within 15m of a person provided proper risk assessments are conducted in each instance, safety measures such as propeller guards and tethers are employed, that the persons involved have signed a waiver that they understand exactly what is going to occur and that the operator can see the drone at all times to ensure that it cannot cause injuries to the persons involved in the activity. Whether the drone has sensors that will prevent it hitting a person is irrelevant. The drones also generally have plastic propellers which, whilst capable of causing significant injury will break and therefore the extent of the injury will be limited to the initial blade strike.

The Wing drones, as I understand it, are authorised to operate within 2m horizontally and 5 metres vertically of a person who is not engaged in the operation of the drone. They do not use propeller guards, do not have line of sight control of the aircraft and rely entirely on the sensors to ensure that the drone does not come into contact with a person. The use of metal blades on the propellers will also mean that any injuries caused by the drone coming in to contact with a person will continue until such time as the propeller blade has been bent to a point where the motor / propeller assembly jams.

Impacts on animal:

In my experience drone operations have a noticeable effects on some local fauna and some domestic animals.

Bird life:

The commencement of a drone operation has an immediate and noticeable impact on local birds. Warning calls are immediately noticeable. Small birds either fly away or hide. Parrot species will immediately take flight and either depart the area or commence circular flights around the drone with occasional sudden movements towards the drone in what appears to be an attempt to harass or intimidate the drone. Ducks and other waterfowl tend to take flight or go and hide in local vegetation. Magpies become very vocal and will occasionally take flight and watch the drone from a distance or will attack it. Seagulls become aggressive and will attack the drone on occasion. Birds of prey see the drone as a threat or possibly as prey and react accordingly (depending on their size). Wedge tail eagles will attack drone and if successful will carry the drone away.

Domestic animals generally are less affected by the presence of drones however and some dogs bark a lot when a drone is operating in the area.

5) Ways to improve the use of drone delivery technology within the ACT;

The use of different propellers and motors may reduce the drones noise levels to a more acceptable level however drones are limited in their application as delivery systems in a city. They are not suitable for use in relation to deliveries to high rise buildings or high density areas and are going to be practically therefore restricted to use in the suburbs or the countryside.

6) Any other relevant matter;

Environmental benefits:

I believe that claims that the technology is more environmentally friendly than the currently used delivery systems is very subjective. Currently the drones would emit less harmful emissions than delivery vans and trucks. The qualifier however is "currently." Vehicle manufacturers are rapidly moving towards hybrid and completely renewable energy systems. Mercedes Benz and Honda are both working on Hydrogen systems and Tesla has unveiled designs for completely rechargeable freight vehicles. In the not too distant future the economies of scale are likely to mean that hydrogen powered freight vehicles will be significantly more environmentally friendly than drone delivery systems.

Bird Strikes and resulting crashes:

Bird strikes will generally result in damage to the drone, injury of the bird and possibly injury to persons on the ground as a result of the uncontrolled descent of the drone (crash). A crash is not always going to be the result of a bird strike but it is a significant issue. Some drone such as the Yuneec H520 that six motors and is designed to be able to fully controllable if it loses the lift of one motor (broken propeller or burnt out motor). I am quite certain that the Wing drones are designed with redundant systems however a bird strike from an eagle could leave the drone completely unflyable and therefore result in a crash.

The issue with a drone crash is the battery type that the drones use. The lithium Ion Polymer batteries used in current generation drone are extraordinarily reactive and can catch fire and explode dramatically if they are over-charged or they subject to a short-circuit or some sort. A significant crash will most likely cause damage to the airframe and wiring and may lead to a short circuit and therefore the possibility of fire.

Airspace usage:

I am concerned that the ACT government may by default be giving control of the airspace between the ground level and 400 ft above ground level in the ACT to a single private company. The ability to fly BVLOS without established flight paths and advisory systems will mean that Wing will have the say over who and how that airspace gets used.

Additionally the company has a business model that is seems to be designed to hijack small parcel deliveries and would force a lot of couriers out of business but can really only work in the suburbs. The company has been granted exemptions from complying with some of the current regulatory requirements that arguably no other commercial drone operator in the country would be able to given (BVLOS operations within very close proximity to members of the public with overflight of populous areas such as schools, shopping centres, etc) and with licencing and registration advantages not available to local operators.

Fitting of quieter motor / propeller combinations may make the noisy problems less noticeable but improving the technology for a business that isn't needed and one that may result in some significant economic impacts on members of the ACT community (couriers) is difficult to justify. Just because a company says they want or can do something doesn't mean that they should be allowed to and if their request / proposal is to be considered it should only be done so after proper consultation with all affected stakeholders and significant, demonstrable support from the community and the presence of a properly resourced and capable regulatory and enforcement regime.

Regards



19/02/2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 077

Date Authorised for Publication: 27 February 2019

Dear Committee,

I welcome your inquiry into drone delivery systems in the ACT and submit as follows.

If drone deliveries commence in northern Canberra then I believe that it is only a matter of time before they will be extended to Hackett where I have lived for the last nineteen years. The peace and quiet of this suburb is one of its greatest amenities and something of enormous personal value to me. In 2006 I headed a community campaign to defend the peace and quiet of Hackett and other nearby suburbs from noise that would have been generated by a proposed dragway in the Majura Valley. We were successful in this campaign and the government shelved the dragway plan upon finding that the noise impact was too high. In the course of this campaign I came to realise how important peace and quiet is to many in this community. I am dismayed to learn that it is again potentially under threat should a drone delivery service begin. I have read many letters of complaint in the *Canberra Times* from Bonython residents and completely empathise.

My privacy is also extremely important to me and I am most concerned that it not be violated. I would find commercial drones flying over my house distressing because of potential loss of privacy. I do not trust a private company that is in the same family as Google - they have a poor record when it comes to respecting privacy.

I also own two dogs and they spend time in our backyard when we are away from home. I am concerned that they would find overhead drones distressing and bark. I am a responsible dog owner and considerate of my neighbours and try to keep barking to a minimum. If they bark at drones then I am concerned for their distress and also the impact on my neighbours.

I also love the abundant birdlife of Hackett. I live next to the bush so there are lots of birds moving through and I have planted my garden with a view to attracting birds. I would be so sad to lose the birds if they were frightened off by drones.

I would be completely understanding of a drone delivery system if it were making emergency deliveries. However, I am most upset at the thought that my peaceful and quiet amenity may be trashed, my privacy may be breached, and my dogs may be driven mad simply because of a commercial and non-essential technology.

I trust you will give my submissions due consideration.

Yours sincerely,

Jenni Savigny



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 078

Date Authorised for Publication: 27 February 2019

Email : LACommitteeEDT@parliament.act.gov.au
Standing Committee on Economic Development and Tourism

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	[REDACTED]
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	

Optional:

How long you have lived in the area:	[REDACTED]
Occupation:	[REDACTED]
Any other background information:	[REDACTED]

*Please note, I would like my submission to **remain anonymous**.*

To the Standing Committee on Economic Development and Tourism,

I hate drones (except for some scientific isolated reasons)! I have been travelling (on and off) over the last two yrs all around Australia and have been in some wonderful, remote, quiet places including National Parks. I have heard what initially sounds like bees then I am only to be disappointed by seeing a drone flying overhead and destroying my privacy and my quiet and peaceful enjoyment of the place. In none of these NP's (NSW, QLD, TAS and WA), were drones allowed to be flown. I have also regularly come across people flying them above others, in crowded, public areas and out of their sight (against the law). I have approached many of these people and asked if they know the laws and restrictions about flying drones and that they were not allowed to fly them in those places, none knew the rules. I doubt that most would obey the rules even when they do are just too lazy to walk to see places and want to make \$ by filming in public places such as National Parks. One operator said that he was sick of being hassled by people who did not like drones! (What about the people that he affects by flying drones in these wonderful, peaceful areas? Typical selfishness).

While in WA I was watching some rare parrots flying overhead only to have a drone fly and scare them off. Could have injured the birds and certainly spoiled my experience when the drone should not have even been there. I have lots of native birds visit my block because of a large remnant eucalypt and native garden and they have come to find that it is safe here over many years, so to have drones flying around, this would interfere with my right to create/keep a safe wildlife haven on my property and to enjoy the birdsong that I often now hear uninterrupted by drones.

I even had a drone follow me for ten minutes or more on Tuggeranong Hill while running and traced the owner back to a Botanical Garden 'Seedy Volunteer' (who did not have permission to fly it there) and could not understand my complaints. It did harass me and followed me everywhere. In my backyard, I also expect privacy and do not want perverts filming me or the noise interrupting my peace and quiet. We have enough noise with traffic, dogs, lawn mowers, loud music so no drones. I have a psychologically disturbed neighbor who I have to put up with, so what is stopping him buy a drone and constantly flying it and perving over my house and property in the future and it is also a good way for potential thieves to check out your security/dogs and whether anyone is home. No longer do fences keep them out. Women living alone would not feel safe, secure even on their own properties and can be further harassed by perverts or ex's/neighbours.

If you have restrictions on building houses/extensions that overlook others property, then how are drones allowed to fly over the same and record. What happens when, and if videos appear on social media or on TV, who controls that? What will stop insurance companies/lawyers flying drones, checking your property or even your own behaviour? Once the flood gates are open, the drone business will not end and just like they are finding out with airport safety, it will be too late to stop them.

It is also a safety issue as they can be heavy, sharp and fly fast and when dropping from the sky, can be lethal weapons but we'll have to wait until someone is killed or hurt first. The drones have to deliver/land, so how can the public be re-assured that they will not be hit on their landing and approach especially in a residential area?

As for the home deliverers, how are they allowed to do it, as the drones are not flying in sight of the controller and this is a basic CASA rule? Even if the Act Govt allowed them for this trial, it is Federal legislation and Sec 51 of the Constitution does not allow inconsistencies such as this.

As many people have stated, I have yet to see a valid reason for the drones. People can order online and get deliveries or call and get deliveries or make coffee in their own home. People drive everywhere and now they are too lazy to do even that that! Incredible.

Airservices submission states nothing about compliance which they would find very difficult as a drone has no visible marking - you need to see the operator and ID them for any possible action. Even then, I have found both Airservices and CASA, reluctant or unwilling to take action on drone complaints.

The Business Council submission just wants more income (for them) at the expense of the community when there is no real demand (the operators are just beating up the issue without any substantive and valid business/environmental case). They talk about freedom of competition with drone operators/businesses - so one drone operator will not be enough, are we to have skies of drones delivering various objects? Who will monitor what is delivered and is safe or any collisions resulting in drones and objects falling on residents and private property?

Saving carbon emissions was mentioned but this is a joke and use of a catch phrase not considering the lifespan of the object delivered and the effects on established services. It may create an interest at least initially and create increase consumerism and waste, discourage people from getting off their butts and moving and pollute the air and private homes with even more noise and invasion of privacy. Delivery drivers will still be needed, they will lose business. Not everything can be delivered by drones - who will regulate and monitor this? Who will require the insurance for damage, injury or death caused by drones? Will they be allowed to deliver illegal drugs? Who is going to check this? If you do allow drones to fly and deliver, this will create a platform and service that criminals can infiltrate. No-one will notice yet another drone in the mix and assume it is on legitimate business, how will the stray drone be identified from other businesses or even traced? Drones carrying objects will need those objects to be securely and safely packaged creating extra probably unrecyclable waste. Certainly hot coffee (as suggested by some), should not be allowed - hot water falling on a person.

Why should drone operators not be registered and licensed when operating in the air above residents and with aircraft when all drivers have to be registered, licensed and insured before travelling on a road? Your compliance action and costs will need to accordingly increase if you go ahead.

I believe that the use of drones in residential areas would also breach privacy laws if not noise laws and breaches are likely to be tested in court.

I have made complaints to CASA before and nothing is ever done. You are also supposed to know the controller and identify them, which does not often happen. It is all too hard for them. I used to work for Airservices so know something about airspace regulation in residential areas. Helicopters are not regulated so what is the likelihood of regulating drones of numerous, unregistered and unidentifiable operators? Do you really want to start and encourage unnecessary drone operations and businesses to the detriment of taxpayers expecting peace, privacy and quiet while at home just to make a few bucks for a few, loud drone operators knowing full well that if you do, it will be impossible to regulate and reverse and many innocent people will suffer?

[REDACTED]

Thank you.

Terms of reference

- The decision to base the trials of the technology in the ACT and surrounding region

- 2) The economic benefit of drone delivery technology being tested in the ACT including;
 - a. The investment that has been brought in to the Territory
 - b. The number of jobs that have been created as part of the trial
 - c. The extent of collaboration with local industry and academic institutions
- 3) The extent of regulatory oversight of drone technology at various levels of government including;
 - a. Local authorities such as EPA, Worksafe, Access Canberra
 - b. Commonwealth agencies such as Air Services Australia, Civil Aviation Safety Authority
- 4) The extent of any environmental impact as a result of trialling drone delivery technology on;
 - a. Residents within the trial area
 - b. Native wildlife
 - c. Domestic animals
- 5) Ways to improve the use of drone delivery technology within the ACT
- 6) Any other relevant matter

Name

January 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 079

Date Authorised for Publication: 27 February 2019



The Secretary,
Standing Committee on Economic Development and Tourism
Inquiry into Drone Delivery Systems in the ACT
ACT Legislative Assembly
CANBERRA ACT 2601

LACommitteeEDT@parliament.act.gov.au

Submission on the Inquiry into the Drone Delivery System in the ACT

The Tuggeranong Community Council [TCC] welcomes the opportunity to comment on the inquiry into the Drone delivery system in the ACT.

As the latest trial was conducted in the Tuggeranong Suburb of Bonython, I would like to provide this inquiry with an impartial account what was said to us by Project Wing and some of the complaints that were put forward by the Bonython residents who later attended the Tuggeranong Council meetings re this trial.

TCC Experiences from Project Wing

Project Wing came to the April general meeting of the Tuggeranong Community Council in April 2018 and their presentation included the following information:

- Project Wing (part of Alphabet, which is part of Google), started in the ACT in mid 2017, initially in the rural area of Royalla where they delivered burritos, and small items from the Chemist Warehouse. The trials were to start in Bonython in 2018
- The drones would hover five metres off the ground and lower a line with a container. Sellers and buyers would hook and unhook the basket containing the goods on a line at either end of the journey
- The drones fly unaided by humans (are operated by remote control)
- They have cameras for obstacle detection - information about journeys and routes would be stored in Google facilities but privacy data would be deleted automatically;
- If things go wrong, the drones are programmed to land safely;
- The drones can't be taken over by outsiders and commandeered to misbehave
(more details can be seen in our minutes on the TCC website for April 2018)

The Project Wing team stayed behind to speak to concerned residents after the meeting and they were also a major sponsor for SouthFest 2018, where they organised a stall to provide information on this community project.

Bonython Experience

Following this meeting, while we had reports that some residents of Bonython liked the service as it saved them using their cars, bikes or walking.

Concerned residents attended various Council meetings to update us of their experiences and

Ph: 0431 235 970 | Email: info@tuggcc.com | Web: www.tuggcc.com | Address: PO Box 436 Erindale Centre ACT 2903



concerns:

- The Project Wing base of operations was situated near the Tuggeranong Dog Training park – upset many dogs being trained
- The base was near the Residential area of Bonython - many complaints about noise and the mental health stresses of constant noise - one resident said that in a survey she did, between 8am and 6pm the longest quiet period was 15 minutes.
- Privacy – flying over their houses and backyards on the way to a delivery
- Concerns over data collection – as all drones operated by cameras
- Safety worries from possible crashes and/or goods being dropped (I was told there was a video of incident when a package dropped from a drone delivery)
- Negative impact on pets and native wildlife – told native wildlife, particularly birds seemed to disappear from the area
- Distractions for pedestrians, cyclists and drivers
- Concern about lack of consultation in locating the trial in Bonython
- Concern about the lack of regulation and perceived deficiencies in the processes surrounding the approval and regulation of the service

Following these concerns, a local community group was formed called ‘Bonython Against Drones’

- They gained 1024 signatures for a petition against drone deliveries in a suburb of 3,500
- Doorknock conducted showed 80% of people on Bonython against the Drone the delivery program

Mitchell Proposal – Project Wing

- Plan to use new quieter drone
- Will be based in warehouse in Mitchell
- Initially will begin making deliveries in the industrial area of Mitchell
- Plans to offer deliveries to homes and businesses in nearby Gungahlin, Palmerston, Harrison, Crace and Franklin,
- Long-term view of operating flights throughout Canberra, as well as other Cities and towns across Australia.

Questions for the future

So, while there is a greater potential for the drone delivery model based in an industrial area there are ongoing concerns, especially relevant when they move over residential areas.

- All people in the affected suburbs must be adequately consulted
- Who is regulating these delivery drones and to what extent are they regulated?
- How does this interact with local government planning?
 - Under planning legislation, the ‘drone port’ is an aerodrome
 - Would there be an impact on height restrictions on adjoining properties
 - What are the emergency procedures?
- What role does CASA play re?
 - Safety assessments
 - Low flying
 - Accident investigation



- Who will people complain to if they have major concerns?
- Can they operate successfully while ensuring;
 - That there are no health and/or mental health effects on people because of this ongoing service
 - People's privacy is retained
 - There is no or minimal adverse effect on pets and native wildlife
 - Safety is guaranteed
 - Operate so pedestrians, cyclists and drivers are not distracted.

Glenys Patulny
President
Tuggeranong Community Council
20th February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 080

Date Authorised for Publication: 27 February 2019

From: [Victor Browne](#)
To: [LA Committee - EDT](#)
Cc: [REDACTED]
Subject: Re drones in Australia
Date: Wednesday, 20 February 2019 12:16:38 PM

All drone
Very Dangerous no control in sudden change of weather
May hit Power Sub Station or major power lines
Hit Children etc
My family who live in Canberra have reported the noise level and the invasion of privacy!
Questions
What Registration do they have?
What public liability Insurance?
Please investigate ?
Yours faithfully
Victor Browne
[REDACTED]

Sent from my iPhone



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Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 081

Date Authorised for Publication: 27 February 2019

From: [Richard Beaton](#)
To: [LA Committee - EDT](#)
Subject: Inquiry into drone delivery systems in the ACT [SEC=UNCLASSIFIED]
Date: Thursday, 21 February 2019 10:12:42 AM

- Author's name: Richard Beaton

- [REDACTED]

- e-mail address [REDACTED]

I would like to make a submission to the Inquiry into drone delivery systems in the ACT.

I have a restricted pilots license and I am a private remote quadcopter (drone) operator, working as a Senior Data Analyst. I have lived in Canberra all of my life.

As an operator, I learned fairly quickly that drones tend to bring out the worst in people.

I have been threatened on numerous occasions, for operating in public areas, on one occasion was chased in my car by some crazed young teens who I had observed undertaking some sort of nefarious activity in the their car parked in bushland in Hawker..

I believe this technology is beneficial, and I am concerned that the inquiry is being over-run by an organised and particularly vocal group of so-called 'haters'.

I have used drones around animals and children and providing you are not being provocative, I have not had a problem, in fact kids are generally inquisitive. The main cohort I have had a problem with is typically conservative people who seem to just dislike the technology.

I note the major issue of the anti-drone group is around noise, I believe these devices will continue to get more quiet as the technology matures and MIT recently flew a 'noiseless' ion powered aircraft. From my experience, I think that even if they were noiseless, there is likely to still be opposition to them, as some people just will not accept a device flying over or near their house.

I believe that once one considers the spin-offs of this technology, they will overcome any apprehension.

Spin-offs may include:

>Further development and maintenance of the technology in the ACT, fostering growth of the remote aerospace industry in the territory.

>Development of lifesaving devices such as delivery systems for autonomous Automatic External Defibrillators and oxygen, vital in the first minute or so after a stroke or heart attack.

>Development of remote search and rescue platforms.

>remote sensing of forest fires.

>providing famers with real-time remote imaging for agriculture.
>(finally) providing us with the closest we are likely to get to a 'flying car' – a multirotor taxi – likely to commence in the next five years.

Kind regards,

Some of my drone footage:

<https://www.youtube.com/watch?v=GC4EWmFj6lo>

<https://www.youtube.com/watch?v=rP5MJ3120iE&t=26s>

<https://www.youtube.com/watch?v=IKyBx--0dqA>

<https://www.youtube.com/watch?v=OQCuwHWRK1I>

RICHARD BEATON | SENIOR DATA ANALYST

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LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

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Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 082

Date Authorised for Publication: 27 February 2019

Submission

Inquiry into drone delivery systems in the ACT

Tony Steel



Terms of Reference

- 1) the decision to base the trials of the technology in the ACT
- 2) the economic impact of drone delivery technology in the ACT
- 3) the extent of regulatory oversight of drone technology
- 4) the extent of any environmental impact
- 5) ways to improve the use of drone delivery technology within the ACT
- 6) any other relevant matter
- 7) information privacy

1) The Decision to Base the Trials in ACT and Surrounding Region

From newspaper reports it looks as though at least one-third of residents in Bonython were appalled by the noise and intrusiveness of the commercial drones. So many of them wrote angry letters to the paper and pushed for this Inquiry. Since they are the people who have actually experienced the drones, this response greatly concerns me as to the impact on the peaceful and tranquil environment of Canberra. Coming from noisy Sydney, this quality of Canberra is highly treasured and worth fighting for.

3) The Extent of Regulatory Oversight of Drone Technology at Various Levels of Government

I am greatly concerned that there seems to be virtually no regulatory oversight of commercial drones at the moment, especially ones carrying less than 2 kgs of weight. Clearly there are so many issues of danger to infrastructure and the public, noise pollution and privacy issues, that this is an area that definitely should be intelligently regulated before any commercial enterprise is given the go-ahead. Examples of where regulation should occur are level of noise allowed, height above homes allowed, corridors of travel, hours of operation, safety requirements, and so on.

4) The Extent of any Environmental Impact as a Result of Trialling Drone Delivery Technology

Hearing dogs in the neighbourhood go crazy when there is any unusual and high level of noise, I can just imagine how the noise of the drones will be added to by frantic and upset dog barking.

I can imagine birds being highly distressed by this intrusion on their airspace. The variety of birds and their numbers is definitely one of the key points of attraction of Canberra.

Andrew Barr said drones will only be like the sound of a lawnmower! This multiplied by the number of drones likely once this enterprise is allowed to operate in Canberra fills me with dread. Noise pollution is a serious form of stress, not regulated and policed enough in our society.

7) Information Privacy

Wing is a Google company and the main interest of Google is information gathering and selling. Commercial drones provide the perfect device for closer surveillance of properties than provided by satellites. This issue will be an explosive one in our digital future. Personal privacy is a key part of democracy and, for me, is something I guard and highly value. Drones endanger my privacy.



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Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 083

Date Authorised for Publication: 27 February 2019

ACT Government Submission

Standing Committee on Economic Development and Tourism **Inquiry into Drone Delivery Systems in the ACT**

February 2019

Presented by Minister Mick Gentleman

**Minister for Planning and Land
Management**

**Minister assisting the Chief Minister on
Advanced Technology and Space
Industries**

Introduction

The ACT Government welcomes the opportunity to provide a submission to the Committee on the implications of drone delivery technology for the ACT.¹

The ACT Government has been engaging with the opportunities and challenges presented by drone delivery technology through detailed policy consideration, and its response to the arrival to Canberra of Wing Australia (Wing), a drone delivery service and initiative of Alphabet. Wing was developed through the Alphabet research and development program “X”, and graduated the program to become an independent Alphabet business as of July 2018.

The ACT Government’s response to Wing and the drone delivery services industry’s presence in the ACT is a continuation of the Government’s commitment to adopting a smart and innovative city mindset and engaging with emerging industries. This approach delivers competitive advantages, better outcomes and new opportunities for ACT businesses and the community, including business investment, more efficient business models and employment opportunities. When responding to new technology, the ACT Government encourages innovators to engage appropriately with community concerns and when appropriate, work with government to get the regulation right. The ACT’s engaged community and agile regulatory environment are key factors that attract innovative businesses to trial and establish their services in the ACT.

Other recent examples of projects that also reflect the ACT Government’s engagement with emerging industries include the development of the world’s largest virtual power plant, the regulation and introduction of rideshare and the CANdrive automated vehicle trial.

The ACT Government’s commitment to innovation and advanced technologies is also seen through support of the CBR Innovation Network, the Renewables Hub as well as highlighting advanced technology industry capability to domestic and international audiences.

These initiatives are demonstrating the benefits of being a trial site for innovative technologies and the advantages of the ACT Government’s approach to working collaboratively with the public, private and not-for-profit sectors more effectively to solving Canberra’s current and future challenges.

The decision to base the trials of the technology in the ACT and surrounding region

Wing approached the ACT Government on two technology trials seeking business support in the form of temporary licences to access unleased land. These licences have provided an opportunity for the ACT Government to learn from the development of an emerging global industry in an ACT context. To date, the ACT Government considers its association with Wing to be productive and constructive for this purpose.

¹ Trials of autonomous ground based delivery vehicles (commonly referred to as droids) have occurred in other jurisdictions to deliver packages. No droid delivery trials have occurred in the ACT. There are unique challenges in relation to droid technologies (including their use of footpaths, roads and other public land) that is not elaborated on in this submission as droids are not the subject of the Committee’s inquiry.

The first technology trial involved the delivery of small packages to the rural residents of Royalla (NSW) from a site adjacent to the Guises Creek Rural Fire Brigade, on the ACT side of the ACT/NSW border (Block 1553 Tuggeranong). Wing was issued a temporary licence from the ACT Government under Section 303 of the *Planning and Development Act 2007* (PD Act) to use this land from 21 September 2017 to 31 March 2018. Wing paid a commercial rate for this licence service.

The second trial involved the delivery of packages to some suburban residents of Bonython from a site in Greenway (part Block 18 Section 46 Greenway). Wing was issued two licences and a licence extension under Section 303 of the PD Act to use this land between 25 January 2018 and 15 February 2019, however this trial only operated from July 2018 to February 2019 as Wing were awaiting approval to operate from CASA. Wing also paid a commercial rate for these licence services.

In November 2018, Wing announced it would be taking steps to establish its first delivery facility in Mitchell during 2019 to service suburbs in the Gungahlin area. Wing has made commercial arrangements for a facility in Mitchell. The ACT Government has not been involved with this process.

For Wing, the move to Mitchell is the culmination of nearly a decade of technical development in Australia and globally and close to two years of trialling the customer experience of drone delivery with residents in the ACT and NSW. Wing estimates it has invested over \$5 million in the ACT in support of the trial to the end of 2018. The ACT Government welcomes Wing's past and future business investment in the ACT and region.

Considerations in the issuing of licences to use Territory unleased land

For the most part, Wing's Section 303 licences reflect standard licences issued to businesses which only apply for the temporary use of unleased Territory land (often issued for grazing or other temporary uses). Wing's licences do include a number of agreed additional requirements relevant to issues, risks and mitigation measures identified by the ACT Government, CASA and Wing. These Licences also reflect the regulatory framework that already exists and impact on Wing and would not apply for other land use models. Notwithstanding this, Wing's approach to the ACT Government to seek assistance, involved an assessment by them, of the opportunities for the ACT community, site requirements and service risks and mitigation measures.

Following Wing's initial approach, the ACT Government identified a number of opportunities that can be developed through the provision of the requested business support that include:

- fostering innovation and new business models in the ACT that would contribute to the innovation ecosystem in the ACT;
- promoting new business investment in Canberra;
- enhancing government consideration of the implications of a drone delivery industry in Canberra;
- further exploring the wide range of situations and application for the technology including in the context of Emergency Services;
- further engaging with innovators and regulators including Wing and the Civil Aviation Safety Authority (CASA);

- engagement with technologies that can reduce: transport carbon dioxide emissions, road infrastructure use and traffic congestion; and increase the access to services and independence for some members of the community and region (noting Royalla was the first trial area); and
- the reputational advantages that come from being a city that engages productively with innovation and research.

These trials also provide an opportunity for the ACT Government and national regulators (including CASA) to learn about challenges and opportunities presented by emerging delivery drone technology, including community concerns about noise, privacy and safety.

In reviewing Wing's site requirements, the ACT Government considered the locations of temporary infrastructure, impact on surrounding land users, parking locations, hours of operation and provision of services including water and electricity. For the Guises Creek Rural Fire Brigade site, EPSDD and Emergency Services Agency (ESA) also ensured that Wing's business model would have minimal impact on the operation of the ESA.

Both licences issued to Wing recognised that CASA has exclusive regulatory responsibility for the safe operation of all commercial and recreational drones throughout Australia. A requirement of each of the Section 303 licences issued by the ACT Government to Wing is compliance with the aviation safety frameworks established by CASA. Wing has demonstrated its capacity to achieve CASA accreditation and operate within the relevant frameworks.

In addition, both licences require Wing to comply the requirements of the Commonwealth Government *Privacy Act 1988* (Privacy Act) which contains a number of privacy protections for the Australian public, and sets out principles for how organisations use information. These are requirements placed on most Australian Government agencies and some private sector, not-for-profit organisations, and some small businesses. Under the Privacy Act, the Commonwealth Office of the Australian Information Commissioner (OAIC) responds to complaints about the handling of personal information.

In issuing the licences, EPSDD also considered Wing's proposed business model against ACT noise limits detailed in Schedule 2 of the *Environment Protection Regulation 2005* and contemporary research on the potential impacts of drone use on wildlife. This assessment led to the inclusion of a licence requirement that limits Wing's activities to between 7am-8pm Monday to Saturday and 8am-8pm Sunday and Public Holidays, and contributed to Wing commissioning research to identify appropriate mitigation measures to reduce potential impacts of drone use on wildlife.

The ACT Government has also leveraged these licence agreements with Wing as an opportunity to be engaged with the new technology and an emerging industry. For example the licences provided for Wing to conduct a demonstration of drone delivery capability and facilitate a discussion with ESA and Rural Fire Service personnel on scenarios where the technology could support operations.

Wing has complied with all licence conditions to date (noting this submission has been developed prior to the conclusion of Wing's Bonython trial).

The economic impact of drone delivery technology being tested in the ACT

There is value to the ACT community in the ACT being a trial site for leading technologies. Wing estimates it has invested over \$5 million in the ACT in support of the trial to date. Beyond this direct investment, it provides high value employment opportunities in the ACT. Wing has engaged with the Canberra innovation ecosystem, particularly through CBR Innovation Network and seeks to work in partnership with universities and the CIT. The ACT Government appreciates that new technologies pose challenges and raise new community concerns and getting regulation right is something the ACT community and businesses expect. Wing has stated that the high international reputation of the CASA is a major reason for undertaking this trial in Australia and Canberra. Canberra is also the highest ranking city in Australia on digital capability and use, and this combined with education, income and dual working families puts Canberra at the forefront of digital adoption.

Enhancing ACT businesses

It is anticipated that parcel delivery by drone will become a component in a network of delivery modes in the coming decades. Businesses can use drones as an inexpensive alternative to road delivery vehicles or cyclist delivery services for small packages. At \$1-2 per trip, drones could be up to 89 per cent cheaper than current instant delivery.² In addition, Wing has demonstrated drones can reliably deliver perishable products like hot food and drinks in a timely manner and good condition. Drone delivery models have the potential to expand the capacity of ACT business to deliver their products to more customers. These efficiencies can help make ACT business more competitive and successful.

Canberra citizens and businesses are being provided, through the trials and Wing's investment, an early opportunity to understand and take advantage of this new technology. Canberra based companies engaged with the trial include: Guzman y Gomez, Chemist Warehouse, Bunnings, Jasper + Myrtle Chocolates and Kickstart Espresso.

Innovation and the CBR brand

Canberra is the only location in Australia where delivery trials are taking place, and one of the few places anywhere in the world. The more than 2500 parcels delivered by Wing in Canberra during 2018 is the largest commercial trial of drone parcel delivery to consumers, worldwide. Wing's proposed Mitchell operations and facility, providing delivery services to the Gungahlin district, is expected to keep Canberra in the lead in consumer delivery by drone during 2019.

The Wing drone delivery trial has generated international media interest raising Canberra's profile as a city of innovation and early technology adoption. This reporting has resulted in Canberra coming to the attention of other companies with interests in city based technology trials. Reporting on experiences of community members has been balanced and engaged with the challenges and benefits of this new delivery method. One example is the recent report in the Wall Street Journal of 26 December 2018³. The high profile nature of this trial, along with other trials such as the Seeing Machines CANdrive trial, means that Canberra has

² *Faster, Greener and Less Expressive: The Potential Impact of Delivery Drones in the Australian Capital Territory*, November 2018 Prepared by AlphaBeta for Wing

³ The Wall Street Journal article *Delivery Drones Cheer Shoppers, Annoy Neighbors, Scare Dogs* can be accessed at: <https://www.wsj.com/articles/delivery-drones-cheer-shoppers-annoy-neighbors-scare-dogs-11545843552>

real credentials as an avant-garde technology city, with sophisticated ways of handling complex regulatory and community engagement issues associated with the trials. This helps raise the value of the CBR brand and encourages further technology investment in Canberra.

Increased independence, participation and inclusion

Drone delivery systems are also an opportunity to improve the independence and access to services for some members of the Canberra community. While delivery services does not replace the need for more inclusive services and public spaces, fast and reliable drone delivery services to residential homes can remove barriers for people with disabilities that impair their capacity to travel to purchase products. For example, errands like visiting the chemist for over the counter pharmaceuticals or getting something for lunch, can present significant access challenges. In this way this service increases inclusion and participation in the economy.

The extent of regulatory oversight of drone technology at various levels of government including but not limited to:

(i) local authorities such as the Environment Protection Authority, Worksafe and Access Canberra; and

(ii) Commonwealth agencies such as Air Services Australia and Civil Aviation Safety Authority;

The role for local authorities and the Commonwealth Government regulating for drone delivery

The Commonwealth Government has exclusive power to regulate drones. It also has exclusive power to regulate activity associated with postal delivery services. Where a Commonwealth law is identified as presenting a complete statement of the law, sometimes expressed as ‘covering the field’, the power to legislate is the exclusive power of the Commonwealth with respect to that topic. This means that ACT laws must be capable of operating alongside any relevant Commonwealth law to have legal effect, and must not seek to legislate on an area which the Constitution provides as a head of legislative power for the Australian Parliament.

Some areas of ACT law apply to drone delivery, as they would apply to any other activity in the ACT, these include: aspects of workplace safety law, fair trading, criminal law, and tort law. The ACT Legislative Assembly does not have the legal ability to provide a comprehensive, targeted regulatory response to drone delivery.

The relevant aspects of the current regulatory landscape, and the responsibility in reference to local and national authority, are explained below.

Regulation applicable to drone operation and registration

Commonwealth civil aviation law provides a comprehensive national approach to the standard and enforcement of the safety, regularity and efficiency of air navigation. The Commonwealth has exclusive power to legislate with respect to any *in flight* measures pertaining to safety. The principle Act is the *Civil Aviation Act 1988* (Cth), which gives effect to Australia’s obligations under the *Convention on International Civil Aviation* (Chicago

Convention). These obligations require the Commonwealth to prescribe and enforce national and uniform civil aviation safety standards. A suite of subordinate legislation provides a detailed regime regulating air operations throughout Australia. Drones are covered by the regime, terms used for drones include: Remotely Piloted Aircraft Systems (RPAS) and Unmanned Aerial Systems (UAS).

The *Civilian Aviation Safety Regulations*, Part 101 consolidate the rules governing all unmanned aeronautical activities into one body of legislation. The operation of large and small drones for purposes other than sport or recreation is covered in these regulations and supported by advisory circulars. The circulars provide guidance to controllers and manufacturers of drones in their operation and construction, and detail where they may be safely and legally operated within Australian airspace.

Commonwealth civil aviation law provides a scheme for drone licencing, certification of aircraft operators, and compliance centred on safety and efficiency of air navigation. Commonwealth law sets requirements based on drone aircraft weight limits and purposes of the flight activity. In relation to drone flight operations, regulations prohibit a range of activities. These include:

- operating a drone in a way which creates a hazard to another aircraft, person, or property;
- flying within 30 metres of another person;
- flying beyond the pilot's line of sight, flying over a populous area at a height less than that from which, if any of the aircraft's components failed it would be unable to clear the area;
- flying over an area where an emergency operation is being conducted; and
- causing a thing to be dropped or discharged from a drone in a way that creates a hazard to another aircraft, person or property.

If an operator is piloting a drone in accordance with the regulations there are unlikely to be noise, privacy, security or safety concerns given these safeguards.

CASA is the agency that bears responsibility for enforcement of these regulations and reports of breaches are dealt with through their website. CASA is also authorised to grant exemptions or bespoke licence conditions to drone operators for regulated requirements if CASA is satisfied that risks to safety and or hazards relating to air navigation have been adequately addressed. ACT agencies do not have a role in managing or enforcing these requirements.

Relevant to drone delivery operations, CASA have signalled a willingness towards a more permissive approach to regulation through its use of bespoke licensing and exemptions. Variation from the standard legal requirements for drone delivery systems is central to their ability to operate efficiently and cost effectively. The change in requirements is necessary due to aspects such as the automation of piloting systems, the speed at which delivery drones need to travel, and the need to fly over populated areas.

Regulation applicable to delivery of items by drone technology: trade and commerce and postal services

The Commonwealth has exclusive authority to legislate for matters regarding civil aviation that relate to interstate trade and commerce or implementing obligations under the international obligations contained in the Chicago Convention. In relation to cross border drone activity with NSW, laws that seek to restrict the commercial transaction aspects of drones, would likely be incompatible with this covering of the field. Additionally, the *Australian Capital Territory (Self- Government) Act 1988* (Cth) requires that trade, commerce and intercourse between Australian jurisdictions be absolutely free, in the sense that there are no unjustifiable discriminatory burdens of a protectionist kind burdening the capacity of other states or territories to trade with the ACT.

With respect to other aspects of delivery of items, the Commonwealth has constitutional power to make laws to the exclusion of state and territories regarding "postal, telegraphic, telephonic, and other like services." Drone delivery activity could reasonably be characterised as mirroring traditional postal transmission of items. The description for "postal or similar service" includes "a packet or parcel carrying service, to the extent to which the service is a postal or other like service", within the meaning of paragraph 51(v) of the Constitution.

In reliance on this power, the Commonwealth has enacted a number of offence provisions dealing with "postal services" into the *Criminal Code Act 1995* (Cth) with offences relating to use of "postal or similar services", including activities that are likely to capture drone delivery. These offences include causing a dangerous article, explosive, or harmful substance to be carried by post or like service.

Regulation applicable to activity in ACT

Drone operators are not exempt from a range of existing laws which apply in the ACT. This includes for example; planning and land use laws, criminal law and tort law. Persons would be liable under ACT criminal law if a drone is used in the commission of a criminal offence, including for example personal violence offences. Similarly, the common law tortious actions of trespass or nuisance apply to drone usage on premises in the ACT. Legal remedies may be sought in relation to such drone use within existing mechanisms through the courts, or in civil claims, negotiated between the relevant parties.

The *Work Health and Safety Act 2011* (the WHS Act) provides a framework to protect the health, safety and welfare of all workers at work. It also protects the health and safety of all other people who might be affected by the work.

All workers are protected by the WHS Act, including employees, contractors, subcontractors, apprentices and trainees, work experience students and volunteers. The WHS Act also provides protection for the general public so that their health and safety is not placed at risk by work activities.

The WHS Act places the primary health and safety duty on a person conducting a business or undertaking. The health and safety of workers at the workplace must be ensured, so far as is reasonably practicable. Duties are also placed on workers and other persons at a workplace.

A Territory law which intends to govern some aspect of a subject matter exclusively regulated by the Commonwealth cannot operate concurrently with the Commonwealth law. Where those boundaries are with respect to air navigation safety is currently before the High Court in the case of *Work Health Authority v Outback Ballooning Pty Ltd & Anor* (D4 of 2018).

In that case, the question for the court is whether Territory law under the *Work Health and Safety (National Uniform Legislation) Act* (NT) is inoperative because it is inconsistent with Commonwealth civil aviation law. The resolution of that issue primarily depends on the extent of the field covered by Commonwealth civil aviation law, and will likely clarify whether the field the Commonwealth had claimed exclusively for itself is one of civil aviation safety in flight, or a broader view.

With regard to aircraft noise, the current drafting of the *Environment Protection Act 2005* excludes the application of its noise limits and standards applying to Commonwealth jurisdiction aircraft, including drones, as aircraft noise is regulated under the Commonwealth *Air Navigation Act 1920*. Generally civil aircraft operating in Australia must comply with the *Airports Act* and meet noise standards specified in the regulations. Concerns about aircraft noise are lodged with Airservices Australia.

The *Air Navigation (Aircraft Noise) Regulations 2018* (Cth) requires noise certification for certain aircraft. For those aircraft not specified in the Schedule, if standards for aircraft noise for aircraft of that class exist in the Annex (Annex 16) to the Chicago Convention, they would also require a certificate. Unmanned aerial vehicles do not seem to be captured by the Schedule or the Annex.

However, the CASA Advisory Circular of July 2018 states that “RPA operators are subject to applicable local noise abatement requirements—such as operating hour limitations and flight path/altitude restrictions—in the area of operation. Details of noise abatement procedures, including 'Fly Neighbourly' areas, are published in ERSAs (En Route Supplement Australia).”

The Territory Plan does not specifically contemplate drone delivery however all land use and planning laws apply to drone delivery companies in the same way they apply to other companies operating in the ACT.

Industry imperative to respond to risks and concerns

Drone delivery is an emerging global industry with dozens of businesses undertaking trials around the world. Within this context there is a significant reputational imperative for innovators to respond to risks and concerns identified by community, industry and government. For example, should safety, privacy, public opinion or environmental risks be left unmitigated by an innovator, this could prejudice future potential services uses from using their service or product and governments from taking a more permissive approaches to regulating their business model (both locally and internationally). These implications, in turn, impact on the viability of the innovator’s business model.

By way of example, this submission provides a detailed understanding of how Wing has responded and mitigated the risks and concerns identified by CASA, ACT Government and the community in relation to their business model.

Regulation of ACT drone delivery trials

Wing in partnership with the Queensland based company Unmanned Systems Australia Pty. Ltd. have conducted two temporary drone delivery trials in the ACT. CASA issued licences for Wing to conduct their drone delivery operation for both of these trials.

Both these trials involved the use of unleased land, which allowed the ACT Government to issue land use requirements through a temporary licence under Section 303 of the *Planning and Development Act 2007* (PD Act). The terms of this licence related to the use of land for the purposes of conducting these trials and set specific operational limitations. These include the obligation to ensure that the operation of drones is conducted: with all relevant laws and all necessary approvals, licenses, policies, procedures, conditions and permissions from all relevant authorities; in accordance with any plans approved or endorsed by CASA, or required by CASA to be complied with; and with operating time restrictions and within the area identified. It also imposed the condition of complying with Commonwealth Privacy Legislation.

CASA issued Unmanned Systems Australia Pty. Ltd. a range of exemptions from the Commonwealth regulations. The CASA licence exempts Unmanned Systems Australia Pty. Ltd. from the requirement to not operate a drone within 30 metres of a person, and to not operate a drone over populous areas. The ACT Government has no role in deciding exemptions provided to an operator, they are assessed by CASA and involve a detailed consideration of technical aspects of the operational design and system performance to a proven safety standard.

Future regulation: a national approach

Drone technology presents a number of complexities and challenges for civil aviation regulation. The most significant of these matters involve issues of safety, and the management of risks for other airspace users as well as people and property on the ground. CASA acknowledge in their 2018 *Review of Aviation Safety Regulation of Remotely Piloted Aircraft Systems* that these critical considerations objectively, and in most instances exclusively, fall within the regulatory remit of the Commonwealth.

In July 2018 the Senate Standing Committee on Rural and Regional Affairs and Transport References Committee completed its inquiry into current and future regulatory requirements that affect the safe commercial and recreational use of Remotely Piloted Aircraft Systems (RPAS), Unmanned Aerial Systems (UAS) and associated systems. The Commonwealth Government tabled its response in November 2018 committing to further work in support of many of the recommendations. In its response the Commonwealth indicated support for the development of a National policy for remotely piloted aircraft safety in Australia, and the establishment of appropriate coordination and implementation mechanisms with relevant departments and agencies to implement the policy and the adoption of the measures above.

The ACT Government supports a national approach to future drone delivery regulation. A national approach is the most effective means of regulating owing to the nature of the exclusive power of the Commonwealth to legislate on significant aspects including drone flights and postal services.

The ACT Government acknowledges the potential benefits to economic growth, environmental green-house emission reduction, and timely supply of critical items in emergency or crisis situations warrant a balanced approach to regulatory compliance and the safe operation of drone services. This is consistent with the Commonwealth

Government response to the July 2018 Australian Senate Standing Committee on Rural and Regional Affairs and Transport References Committee.

The Commonwealth Government's position is that the regulatory approach to drones must be proportionate to risk.

The ACT Government supports the development of nationally consistent regulatory measures. Measures proposed by the Commonwealth, include;

- development and administration of new regulatory initiatives for remotely piloted aircraft systems,
- a mandatory registration regime and education program and
- increased delegated powers which may allow on-the-spot fines; and
- CASA, Australian Federal Police, and relevant authorities prohibit the use of remotely piloted aircraft systems in airspace above significant public buildings, critical infrastructure, and other vulnerable areas.

The ACT Government is a human rights jurisdiction and takes its obligations to protect the right to privacy of ACT citizens seriously. The implementation of the recommendation to establish a comprehensive research and data gathering regime by the Commonwealth should be the least restrictive of the right to privacy. The ACT Government considers that collating and centralising information containing RPAS registrations, operations, trends and incidents, for the purposes of assessing the efficacy of regulations, and to inform the future regulations is a legitimate purpose and can be done in a way that does not limit the right to privacy.

The extent of any environmental impact as a result of trialling drone delivery technology on:

(i) residents within the trial area;

(ii) native wildlife;

(iii) domestic animals; and

(iv) greenhouse gas emissions

Residents

The ACT Government notes that some residents in the Bonython area have raised concerns about the distinctive sound of Wing's drones and the origin of the sound (e.g. neighbours' backyards and open space beyond their boundary fences rather than street facing aspects of their home).

The noise generated by the small electric engines that power drones is distinctive. However, Wing advises that drones used during both the Royalla and Bonython trials are equivalent to or quieter than other activities that create noise that are part of the urban/suburban soundscape, including idling trucks (70dB at 15 meters), lawnmowers (70dB at 15 meters) and other garden maintenance equipment (75dB at 15 meters). The Environmental

Protection Regulation 2005, allows for these equivalent activities between 7am-8pm Monday to Saturday 8am-8pm Sunday and Public Holidays.⁴

Wing has responded to the concerns of community members on these issues and has commenced testing lower pitched and quieter drones. Wing has also sought to reduce the impact of their service on individuals by slowing their drone vehicles down and modifying flight paths so they don't fly over the same areas repeatedly.

Wildlife and birds

In relation to drone use generally, there are only a few studies that have been undertaken worldwide seeking to assess the level of disturbance for wildlife, with research only just beginning to explore this matter more fully.

The research that has been undertaken and the trials are assisting to increase the understanding of potential impacts of drone delivery services on native wildlife, particularly birds, in urban landscapes in the ACT. This understanding has been informing the operations of Wing at Bonython and proposed operations in Mitchell.

The impact on native birds was identified by EPSDD as a potential risk early in the development of a Section 303 licence to use land in Greenway. As part of licence negotiation, Wing agreed to engage a local consultant (NGH Environmental) to undertake research into the potential impact of their services and identify strategies to mitigate that impact. Wing has shared this research with the ACT Government and EPSDD ecologists have provided comment on this analysis.

The ACT Government understands that Wing has engaged local ornithologist specialists as part of establishing their new service in Mitchell. This approach will support ongoing analysis on the business model's implication for native species and the development of appropriate mitigation measures.

It is important that government and business work collaboratively to understand the implication of this type of service. The ACT Government is pleased Wing has undertaken to contribute to the development of research that contributes to a growing body of knowledge on implications of drone technology.

Domestic animals

The ACT Government notes that there had been some initial concern from dog owners within the Bonython trial area. However, the experiences of Wing with animal owners in Royalla and Bonython suggest drones use is not significantly different to other activities that take place in urban/suburban environments (e.g. the post-bikes or garden maintenance activities).

Greenhouse gas emissions

The ACT Government notes that most contemporary drones are powered by batteries and electric engines. Given the ACT will access 100 per cent renewable electricity by 2020, drone

⁴ The Access Canberra Snapshot: *Noise in residential areas*, provides more information about the Environmental Protection Regulation 2005 at:
<https://www.accesscanberra.act.gov.au/ci/fattach/get/237258/1535950331/redirect/1/filename/Snapshot+Noise+in+Residential+Areas.pdf>

technology charged from mains power will be powered by renewable energy. The service could reduce annual carbon dioxide emissions by 8,000 tonnes due to fewer road vehicle deliveries, according to AlphaBeta research prepared for Wing. This emissions reduction will provides an opportunity to reduce the ACT's transport emissions and assist in meeting the legislated net zero emissions target by 2045.

Further, Wing's service is likely to incentivise a new relationship with delivery services for businesses and residents. Similar to food delivery services (like Uber Eats or Deliveroo) the model will increase the reach of some businesses by reducing barriers to trade (parking, traffic, retail floor space for restaurants, and delivery times). This may see that mode shift from other delivery methods is not fully realised, but rather delivery services become more accessible and their utilisation increases. A similar phenomenon was observed following the introduction of ride share and its implications for the taxi industry in the ACT.

Ways to improve the use of drone delivery technology within the ACT

The ACT Government would like to acknowledge Wing's ongoing refinement of both their technology and business model in response to issues and concerns raised by service users, community members, businesses and Commonwealth and ACT government agencies.

Wing has demonstrated a conservative approach to growth, working with CASA and the ACT Government to identify and respond to risks, testing and evaluating mitigation approaches, and engaging community on what value they see from their service.

The ACT Government considers Wing's approach to date to be a responsible, collaborative and constructive approach to improving the use of drone delivery technology in the ACT. The ACT Government encourages other innovators that wish to establish a presence in Canberra to adopt a similar approach to the development of their services or technology.

Information privacy

As established in this submission, drone deliveries operating in the ACT are conducted by the private sector. No ACT public sector agency is engaged in drone deliveries, nor is there a future intention to trial this technology for deliveries by Government. This distinction determines which information privacy laws apply. The *Information Privacy Act 2014* (ACT) and *Human Rights Act 2004* (ACT) both provide privacy protections which only apply to ACT Government agencies.

The Australian Privacy Principles (APPs), which are contained in schedule 1 of the *Privacy Act 1988* (Privacy Act), outline how most Australian Government agencies and some private sector, not-for-profit organisations, and some small businesses (collectively called 'APP entities') must handle, use and manage personal information. The Privacy Act contains a number of privacy protections for the Australian public, and sets out thirteen principles which govern how organisations should collect, store, and disclose information. As a term of the ACT land use licence Unmanned Systems Australia Pty. Ltd. agreed to follow the requirements of the Privacy Act.

The Commonwealth privacy framework applies to private sector entities and small businesses with an annual turnover of more than \$3 million. However, a range of exceptions can apply. A small business which is operating drone deliveries with an annual turnover of \$3 million or less will have to comply with the Privacy Act if it is, for example, dealing in sensitive information such as health information, trading in personal information, a Commonwealth contractor, a business “related” to a business that is covered by the Privacy Act, or it has “opted in” to be covered by the Privacy Act.

The Australian Privacy Principles focus on transparency in the way personal information is collected. The privacy principles are designed to be technology-neutral – they can apply equally across traditional styles of collection of information, such as paper files, through to storing information on computer databases. This is crucial as it relates to drone delivery systems, as the operational requirements of drones for the purposes of delivery systems require the automatic collection and storage of certain types of information in server logs. This information includes but is not limited to credit card information, street addresses internet protocol addresses and other geolocation data, cookies, and images, used to assist in the delivery process and in analysing issues and improving flight control and guidance systems.

Irrespective of its annual turnover, or whether or not it is “related” to a larger organisation, the current trial operator Wing is bound by the terms of the section 303 licence to comply with the provisions of the Privacy Act. As such, any individual affected by Wing or any other APP entity may contact the federal Office of the Australian Information Commissioner (OAIC) if they seek to make a complaint about the handling of their personal information. The OAIC can make determinations on privacy complaints where conciliation has not resolved the matter or in relation to Commissioner Initiated investigations (CII).

The ACT Government also notes Wing’s advice regarding the technical specification and use of on-board drone cameras for navigation purposes. Wing indicate that these cameras are deliberately low resolution, not monitored in real time and do not collect personal information.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 084

Date Authorised for Publication: 27 February 2019

Secretary
Standing Committee on Economic Development and Tourism
(Drone Delivery Systems in the ACT)
ACT Legislative Assembly

J.C. Blount

21 February 2019

Submission regarding Drone Delivery Systems in the ACT

Although I live in an area yet to be directly-affected, I am deeply concerned about the prospect of delivery drones in the ACT.

To intrude on a whole community's quiet enjoyment and residential amenity on an ongoing basis requires an evident necessity and public good. This has not been demonstrated in this instance, notwithstanding the specious arguments advanced by and on behalf of those with a direct commercial interest in the venture.

The necessity, willingness and ability of the elderly and disabled to access this "service" has been grossly overstated. Indeed, it is precisely the elderly and disabled who would have most difficulty in accessing the actual drone delivery on arrival somewhere on their property.

It is clear that the proponents of the scheme envisage making commercial profits by promoting more mundane and pervasive use of the facility, in particular fast food

It is one thing to make intermittent use of drones by public authorities for well-defined purposes, whether it be ACTEW maintenance surveys or emergency medications. It is another to take over the air space directly above residential areas for the profit of the few and the arguable convenience of a minority.

The noise issue has been canvassed widely: we are accustomed to relative peace and quiet in our suburbs, broken mainly by the sounds of birds – an essential feature of what makes Canberra the bush capital we love. If the scheme proves sufficiently patronised to be commercially viable, this will be a thing of the past. The noise of street traffic in the suburbs is largely buffered by buildings and vegetation. The same sound 30 or 50 metres in the air carries to a much greater degree. (One hears the call of a bird high in a tree 100 metres away much more clearly than one on the ground a fraction of that distance away).

A central concern is the effect that drones operating at these heights will have upon the abundant urban bird life of Canberra. It has been stated that few collisions with birds have been recorded but this is not the point. It is not just the risk of collision and direct harm: the presence of these drones at the heights that our suburban birds frequent can only serve to disturb the birds and their patterns of feeding, nesting and breeding. Many birds will simply

go elsewhere. We will lose a large and significant part of the quiet enjoyment of our property and its arboreal surrounds.

A range of birds use our property and the airspace directly above it and it is intolerable that they should be disturbed or driven away by unnecessary technological intrusion for narrow commercial advantage.

Until the present law is further clarified it is arguable that drones operating between 30 and 100 metres directly above my property without explicit permission may be committing trespass as well as intruding on my right of quiet enjoyment of my property.

One of the most disturbing features of the present situation is that the Civil Aviation Authority has made clear that it is concerned only with safety issues, not the loss of public and private amenity or the environmental consequences. Yet the ACT Government appears to be reluctant to step up to address these issues.

I would strongly urge that the systematic use of drones should be permitted in residential areas only by and on behalf of public authorities for clearly defined and authorised public purposes (including emergency medical deliveries).. The commercial delivery service presently being trialled should be banned.

In any event, there should be clear and restrictive regulation of drones by the ACT Government.

Yours faithfully

John Blount



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 085

Date Authorised for Publication: 27 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Feedback WRT Project Wing Drone Trial
Date: Wednesday, 20 February 2019 5:48:05 PM

Good afternoon,

My name is [REDACTED] and my family and I reside in a [REDACTED]
[REDACTED]. We were active participants of the Project Wing drone trial and we strongly support the company with what they are trying to achieve.

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Initially, we joined the Project Wing program for basic reasons:

- The 'novelty' factor of being part of such a trial; amongst the first people to utilise the service
- The future opportunities this sort of technology will encourage
- So our daughter could – in the future – look back and realise we were part of creating/building/refining something really positive and important.

I firmly believe drone delivery is a great option for the future. There are so many areas where drone delivery could be utilised to a life-saving effect; transfer of emergency medications, first aid equipment and blood supplies, transfer of clean water, food, communications devices, power supply, shelter, space blankets etc for people who are stranded or cut off for whatever reason. BUT there is no money in those enterprises – nor should there be. To ensure delivery drones are available and AFFORDABLE to assist in matters of life and death, there has to be some sort of financial incentive to pump the millions of dollars and countless hours into research and development. Allowing a commercial drone delivery system creates the opportunity to raise the income required to refine the drones and the associated systems etc. Let's face it, in this modern world, large companies aren't shelling out millions of dollars to give their products and services away for free. There needs to be some give and take; allowing commercial opportunities creates incentives for companies (like Project Wing) to continue spending on R&D, making delivery drones quieter, safer, stronger and most importantly, readily available and affordable when needed for life and death situations.

I would like to discuss some of the arguments the (very loud) detractors of the trial have raised within the media.

- Reduced Wildlife – we have actually seen more large parrots, galahs, cockatoos, magpies etc this summer than our previous three summer periods, all spent in the same house. We still had plenty of kangaroos in our front yards during the cooler months. I cannot turn this into a statistic as I have no figures, but through observation and discussion, my family and friends firmly believe the wildlife - in our immediate area, at least – has not been impacted.

- Upsetting local pets – our two dogs never once barked at any of the delivery drones. Not when they were flying overhead, not when they were delivering to our property, nor when they were delivering to a neighbour. I cannot say for certain, but I don't recall any of our neighbours dogs being upset or reacting to the drones in any way, either. Please keep in mind, just about all of the local dogs will start barking when the mailman does his round, or when a delivery vehicle pulls into a nearby driveway.
- Excessive Noise Levels – throughout the duration of the trial, we were surprised at how quickly the drone noise became more like white noise, unless you were specifically listening out for it. Yes, the volume definitely increases as the drone descends to make the delivery and ascends to return to Project Wing BUT I believe this is something that will improve over time, as long as a commercial opportunity exists to support the R & D. I had family members visit from Far North Queensland and given all media reports they had heard up home, they were expecting massive levels of disruptive, deafening noise. These relatives visited on different occasions, separately to each other, and ranged in age from 13 years to mid 60's. Not a single one actually heard a drone without me prompting them to listen and they were very surprised, questioning how the media storm could be so different to reality. In fact, I opened the garage roller door one day to find the drone already descending to our driveway, even though none of us had heard anything. The only reason I can come up with is that maybe the loudest detractors live near Stranger Pond, and maybe the sound bounces around differently near the water etc?
- Privacy – we live in a world where privacy is quickly becoming a thing of the past. I would guess there wouldn't be many places where one could go without being caught on camera somewhere! Between CCTV, mobile phones, go-pro cameras, doorbell cameras, search and rescue helicopter cameras and dash cameras, there really isn't anywhere to hide. Have the residents who are concerned about privacy accepted the presence of – or even utilised – any of these other 'privacy-invading' devices? These delivery drones are flying over properties at speeds of 100km/hour; they aren't lingering to take photos of your washing line or peek in your windows! Once you take in the commercial factor, isn't it more likely the operators will want the drones back at base as quickly as possible, both to keep their costs down and to ensure they have assets ready to go whenever required?

On a more personal note, I found the Project Wing drone delivery system to be amazing for quite a number of situations. There has been a lot of criticism directed towards those of us who used the service, with accusations of laziness and selfishness coming thick and fast. (This could be why you haven't heard too many people publicly supporting the trial, showing their support by continuing the use the service rather than attempting to draw media attention.) A bit of understanding would go a long way. I suffer long term medical conditions and my husband is regularly away with his RAAF career. This leaves me at home to take care of our daughter on my own for extended periods of time. We have no family in Canberra and my medications can (and do) impact my driving ability. It was such a relief to know I could have healthy food delivered to our house in a matter of minutes, negating the need for me to drive for takeaway or aggravate my injury with the physicality of preparing a meal. I could have a drone deliver fresh bread when

my daughter wanted a sandwich, saving me from driving (potentially under the influence of medications) and having to find the energy required to prepare for and head to the shops with a small child. It was so good to focus my limited energy resources on actually looking after our daughter and even better to know I was avoiding any risk of being sick in public and causing a scene. For us, an item was usually delivered within 5-8 minutes of placing the order.

Project Wing actively sought feedback and were not afraid to ask the hard questions – or hear the answers even if they were negative. Staff from Project Wing spoke with me on a fairly regular basis, enquiring as to my experience in relation to issues other people may have expressed concern about. I found them to be open, honest and genuinely looking for ways to improve their service. On the occasions I contacted them, I always received a response within a few hours and they were very quick to implement constructive suggestions.

There are other positive effects of professional drone delivery:

- Single car families can leave the car with the person travelling to work rather than having to make two round trips per day to drop off and collect the worker. This reduces traffic on our roads and also ensure the independence of the person left without a vehicle.
- Elderly people or the infirmed will have more opportunity for independent living as drone delivery could allow for meals on wheels deliveries, pharmacy and food deliveries and whatever else may assist in day to day living. I accept drones are impersonal, but they do allow an advanced level of independence, especially for those who don't drive vehicles themselves.
- I remember in my youth, we were always terrified and embarrassed to purchase condoms and lubricant in person. You never knew if you were going to know the person who served you, or if that person was likely to inform anyone/every one of your purchase. There were also the times where the excitement had taken over and no-one wanted to take a break for long enough to duck down to the servo for 'supplies'. If it saves even one couple from an accidental pregnancy, being able to purchase condoms and lubricant online and have it delivered within MINUTES is a seriously good thing.
- I simply cannot go past the future opportunities available within the drone delivery realm, as long as there is an opportunity for commercial applications to fund further research and development.
- I am not a coffee person, so don't have coffee in the house. It was nice to be able to offer visitors a fresh, good quality coffee (via drone) rather than having to travel to a coffee shop. (Way too hard with my medications and having a small child tagging along.)

In summary, I support drones as a future delivery system. They may be superseded with something more innovative/economical/environmentally friendly in the near future, but this won't happen without opportunities in the here-and-now to encourage expenditure and expansion within the industry to develop these 'better' systems. The only way to improve is through support and honest, constructive feedback. Cutting off a program like Project Wing is a

step backwards. Ensure the industry has rules and measureable guidelines - which can be and will be enforced – and provide a set of goalposts for companies like Project Wing to aim towards.

Right now, we have the opportunity to lead the world towards the future, and that's an opportunity that shouldn't be thrown away frivolously.

I thank you for the time you have taken to read my submission. I am thankful ordinary everyday people like me have the opportunity to express our opinion and relay our experiences. I apologise if any of my thoughts come across as jumbled and for repeating myself, but I feel this is simply so, so important.

If you have any queries in relation to anything mentioned in this submission (or anything else to do with participating in the trial) please contact me either via return email or on the phone number below.

Cheers,

[REDACTED]

[REDACTED]

[REDACTED]



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 086

Date Authorised for Publication: 27 February 2019

From: [Robert Glasser](#)
To: [LA Committee - EDT](#)
Subject: Submission to Inquiry into drone deliveries systems in the ACT
Date: Thursday, 21 February 2019 12:58:33 PM

1. We are writing to express our strong opposition to the use of drone delivery systems in the ACT.
2. We do not support a trial or test of drone deliveries in any suburb in the ACT.
3. There is strong opposition in the community to the use of drone delivery systems. We have attend community meetings organised to discuss this issue, at which community members expressed very strong concerns ranging from issues of privacy to the level of noise.
4. Before taking any further action with respect to drone deliveries systems, the ACT Government should organise a public hearing on this important topic.

Thank you for incorporating these views in your deliberations.

Robert Glasser

[REDACTED]

Kirsten Anker

[REDACTED]



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 087

Date Authorised for Publication: 27 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Submission, DRONE enquiry
Date: Thursday, 21 February 2019 2:35:46 PM

[REDACTED]

I would like my submission to be **anonymous**, thank you.

Trialling

I don't believe drones should be used for non urgent deliveries in suburban Canberra. My comments about various Terms of Reference follow:

a) is this a trial of technology, or a trial of a particular use of drone technology? I believe drone delivery is already used in parts of the USA, what is the basis for a trial in Canberra of something already in use?

Economic

b) As this technology is American, how will it be ensured that the majority of profits do not leave this area?

Will the amount of investment brought to the Territory be made public so that citizens can make informed decisions about drone delivery?

How many jobs will be created? From information publically available it seems the operation will require few operators. Has an independent assessment been made of the likely number of jobs? Has an assessment been done of the number of possible job losses? It seems remiss to me that this last has not been included in the ToR's. Will possible job losses be felt primarily by students and other low paid workers? How would this affect Canberra's job market?

c) who will have legal and ohs oversight of drone delivery and what legislation will be introduced to govern it? I would be very concerned if such matters were not in place.

d) I am very concerned about the privacy implications of drone delivery, I do not want my property being photographed by international operators - or by anyone. I would object to any photographer taking pictures of my property without my consent.

As a citizen I believe I have a right to the quiet enjoyment of my home and garden and of my local recreational and natural spaces.

I also do not wish to have the natural vistas I now enjoy visually and aurally disrupted by machines.

It worries me that few studies have been done into the effect of drones on birds, bird life in Canberra is a distinguishing part of its reputation.

Lastly, I urge you to not allow drone delivery to Canberra's suburban areas.

Sent from my iPad



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 088

Date Authorised for Publication: 27 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	Christopher Vincent
Postal Address:	<div style="background-color: black; width: 300px; height: 20px;"></div>

Background:

My wife and I have lived in Bonython since 2009. We moved to Bonython to enjoy the peace and quiet of a suburb and block on the very edge of the city. We particularly chose our block to access the walking tracks along the Murrumbidgee corridor, specifically throughout the Pine Island area, and appreciate the presence of the many animals and birds that frequented our immediate neighbourhood and the woodlands opposite.

I would like to comment on the following terms of reference:

1. The decision to base the trials of the technology in the ACT and surrounding region.

Lack of Consultation:

We were completely unaware of the agreement between that ACT Government and Project Wing to fly delivery drones near our house until we asked a real estate agent in mid-2018 what the work was for being carried out between Pine Island Road and Rowland Rees Crescent. The agent explained it was for a trial of drones to deliver burritos and some pharmaceutical supplies to residents of Bonython. Given that our house is only some few hundred metres from the already well-developed site, we were quite surprised and concerned about these developments. We were also very upset that an agreement to allow drone deliveries over the suburb of Bonython had been reached without any due consideration, consultation or concern for the residents.

Lack of Legislation and Consideration

The agreement by the ACT Government to allow Project Wing to carry out the delivery by drone appears to have been made without any consideration of the many articles and papers that have noted the lack of appropriate legislation, due consideration and the risks inherent with drone use. Of particular interest are the Senate Rural and Regional Affairs and Transport Reference Committee Inquiry Report: 'Current and future regulatory requirements that impact on the safe commercial and recreational use of Remotely Piloted Aircraft Systems (RPAS), Unmanned Aerial Systems (UAS) and associated systems' released on 31st July 2018 and the NASA research document on the impact of drone noise (<https://qz.com/1033675/a-nasa-study-found-drones-sound-more-annoying-to-people-than-cars-or-trucks-and-flying-them-higher-wont-help/>). These papers, and many others, note the significant risks associated with the employment of commercial and recreational drones being allowed without proper legislation and consultation being put in place at federal, state and local government levels.

Privacy Concerns

I am informed that Project Wing sends the images recorded by the drones during flight over the suburb of Bonython to a facility in the United States for a period of 30 days and then destroyed. This is extremely concerning. I am very concerned that the images may be accessed during the 30 days by any number of people or organisations for reasons that can only be speculated, otherwise why are the images stored at all? Given recent reports regarding adverse business practices by large corporations such as Google and the fines subsequently imposed, how can anyone have trust in the integrity of these companies?

Impact of the Drones:

When the drones began their deliveries at the start of the trial, the initial flight path was over or very near to our house. I became quite agitated and angry at the noise being generated by the drones and the impact on my and my wife's privacy in our own yards. My family and I remarked that as the day of deliveries progressed my agitation became more noticeable. Some residents of houses near to ours would have between 3 and 5 deliveries at the start of the delivery window most days, then again at around midday and again in the late afternoon. This meant that the delivery drones would fly over or near to our house at least 6 or 10 times on each occasion. Our house is very well insulated, with double-glazing on all glass windows and doors. This did not significantly lessen the noise heard inside our house, especially when the drone was in the hover mode for the actual delivery of the item ordered. The noise from the drones is very loud and distressing, even more so when we are outside our home, in the garden or simply relaxing with family and friends.

Project Wing later altered the majority of the flights to fly over the trees to the west of our house, over an established ACT Government approved mountain bike track, and then along Stranger Pond. While this did lessen the noise heard in our house, it was still very noticeable and annoying and simply moved the noise nearer to other residents.

Over the last century or more the use of land-based delivery vehicles has become an integral part of how we live and work. People have adapted to this and have sought ways to reduce the impact on their lives, with homes built to minimise external sounds, the use of one vehicle to make multiple deliveries and the introduction of electric vehicles. We decry the impact of vehicles on the roads and yet the intention of organisations such as Google and others, including the ACT Government, is to fill the skies with loud, invasive and unsightly drones. No consideration is given to the extremely detrimental effect this would have on citizens, the birdlife and other animals. Our homes are not built to negate noise from overhead. We enter our homes expecting to be able to enjoy some peace and quiet from the outside world should we want it. The advent of large numbers of drones flying low over our homes would have the very real possibility of harmful outcomes to many citizens.

Drone Use Contrary to Public Health:

Many governments, including the ACT Government, have properly promoted the need for citizens to become more active and health conscious, to limit or negate the incidence of obesity and mental health problems that have become more evident in recent years, and to become more neighbourhood aware. The advice from most professionals and politicians has been for people to not consume excess "fast foods", to be more active through walking, cycling and other similar activities and to get to know their neighbours or be involved with community groups. And yet the ACT Government, in partnership with Project Wing, has knowingly and deliberately encouraged people to stay within their home environment, have fast foods and other small items delivered directly to them and to show a disregard for their neighbours when subjecting them to the noise and privacy deprivation inherent in the use of delivery drones. I am aware that conflict between neighbours has occurred because of the frequent presence of the Project Wing drones.

Impact on Local Businesses:

The Project Wing drone delivery trial was ill-conceived and contrary to the promotion of local businesses. The companies initially included in the delivery trial were not local businesses but had the effect of drawing customers away from local businesses. Such an example was the use of Chemist Warehouse, a company not previously operating in the vicinity of the suburbs surrounding the South.Point shopping complex in Tuggeranong. The use of this company was contrary to the promotion of local pharmacies, some of which also had home delivery services available. Such behaviour is similar to the large supermarkets deliberately undercutting and then destroying the small businesses in the area to ensure a complete lack of competition.

2) The economic benefit of drone delivery technology being tested in the ACT:

I believe that the trial of the delivery drones by Project Wing over Bonython does not give a true representation of the actual cost of providing items to households, nor does it give any indication of what return might be made to the ACT Government. For this particular trial, the charge for the

delivered item to the resident only covered the cost of, say, the coffee or burrito but did not include the expenses incurred by Project Wing for the actual delivery. This, therefore, does not give an accurate picture of how much a resident of any suburb in Canberra might be charged if all factors in the delivery process were included in the final fee. Project Wing cannot realistically determine how many citizens would have taken up the service if the true, total cost of each delivery was charged. Without a true representation of the potential number and cost of deliveries and therefore the gross income generated, it cannot be concluded what the economic benefit might be to the Government and people of the ACT.

4) The extent of any environmental impact as a result of trialling drone delivery technology on;

During the months of operation of the drones over Bonython, it became clear that the wildlife previously seen near our house was not present. Prior to the drones operating, there were at least two groups of magpies occupying the trees near our house. They were regularly calling to each other or disputing territory. When the drones started flying in the area the magpies were no longer evident. Other birds such as parrots were also not seen flying over or near to our house. The many kangaroos previously seen feeding in the fire break immediately in front of our house also ceased to be evident.

5) Ways to improve the use of drone delivery technology within the ACT

I encourage and support the use of drones for appropriate purposes such as by emergency (police, fire, search and rescue) and life saving services, power line inspections, shark patrols, research by government and academic institutions, land mapping, various elements of our defence forces and deliveries to remote properties and communities, especially in emergency situations.

However, I do not agree that drone technology can be improved with regard to the use of drones to deliver goods to suburban homes anywhere in the ACT as I strongly believe that there is no place for this service to be used in the ACT, or in any metropolitan area in Australia. I believe that this would be contrary to the peace and amenity that we have worked hard to achieve in our preferred place of living, particularly having lived through the unpleasant experience of the Project Wing trial in Bonython.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 089

Date Authorised for Publication: 27 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	Carol Vincent
Address:	

Background:

Having previously lived in Kambah for 35 years, my husband and I decided to purchase a block and build in Bonython and moved in 2009. We selected our block due to the peaceful amenity, the closeness to Pine Island recreational area and Stranger Pond where we, and with our grandchildren whom we regularly cared for, could have a lifestyle of quiet, enjoyment of nature especially the bird life, and could walk for fitness and exploration around our nature area without the need to use our vehicle to drive to green space areas for leisure and pleasure. We both retired from the work force during the early years of settling here and enjoyed pottering in our garden, enjoying outdoor entertaining and walking around the pond and nature park, by ourselves and with our grandchildren.

Then ... the drones came. Our house is approximately 50-100 metres off the direct flight path of all drones that originally went out on deliveries and came back again, as well as in very close proximity to houses around us that were part of the trial, and who had (very) regular deliveries.

I am also the Area Coordinator for Bonython Neighbourhood Watch (NHW) and have been for the past 10 years. I am well known throughout the suburb through NHW and other community activities that I have been involved in. When Wing first commenced deliveries in the suburb I was the first point of contact for many residents and I was inundated with phone calls, emails and queries from many residents. This dates back to early March 2018 when testing only was being undertaken. As part of my role in providing community assistance, I initially spoke to and wrote to various MLAs about the concerns that residents were raising with me. At the time, which was even prior to the actual deliveries commencing, I was astounded by the anger and frustration expressed by so many residents about the lack of information on why the trial was happening and who complaints and feedback could be directed to, other than Project Wing itself. Many residents stated that they had written to the ACT Government and had received no replies. I myself wrote to Minister Gentleman's office to receive a reply nearly a month later with a response that did not directly address the concerns and issues that I had raised. In September I withdrew from being a point of contact when the action group 'Bonython Against Drones' was formed and referred all communication through that medium.

In my role as Area Coordinator for Bonython Neighbourhood Watch I have spent many years endeavouring to not only provide security and safety information to residents but also help create close, healthy neighbourhoods and connected communities where neighbours took time to speak with and watch out for one another. I have now witnessed a social decline and antisocial behaviours in the suburb with neighbours pitted against one another, and friends now not talking since the drone deliveries commenced. I myself have been angered by my own neighbours with what I believe to be selfish and inconsiderate actions of satisfying their singular need without any thought or regard to the impact that drone deliveries may have on others. This has been heightened by the actions of Wing when they offered a free drink with every order; consequently people placed only one order at a time and this in turn resulted with many more noisy deliveries. This, coupled with the problem that if a household wanted to order a family meal, due to weight restrictions, this could be and was witnessed that it took up to six deliveries to complete the order. Additionally, to achieve a delivery to someone on the other side of the suburb, potentially up to 150 households may be affected by the noise of the drone flying over, then another 20 or so households are even more impacted when the very loud delivery is made in the drop zone, and another 100 households

again affected with the drone returning to the 'nest site'. All this inconvenience for one person, possibly for just a coffee, who does not consider the effect on so many others.

I would like to comment on the following terms of reference:

1) The decision to base the trials of the technology in the ACT and surrounding region

I would like to offer the following statements on the drone delivery service in Bonython.

As a resident who has lived with the drones since testing began in early 2018, I verify with experience the following issues

Noise

We have noise all around us, at varying levels. Noise pollution worsens as cities grow but the convenience of drone delivery will come with a price. Noise pollution is not only annoying - it is harmful to our health. Exposure to noise has been linked to heart disease, lower academic performance and sleep problems.

The high-pitched frequency of drones is unique and appears to be far more penetrating than car or general road noise. This is supported in a recent document by NASA research (<https://qz.com/1033675/a-nasa-study-found-drones-sound-more-annoying-to-people-than-cars-or-trucks-and-flying-them-higher-wont-help/>) where it was found that the buzz of a drone is more annoying to people than the rumble of cars and trucks. This is a warning sign that the ambitions of commercial companies to deliver their goods by drone could reshape the soundscape of cities and suburbs to the detriment of the citizens.

It is clear that our homes are not designed to shield from noise above us. In line with government and health advocate directives, we also should be willing and eager to get out of our homes, move about, exercise and take in the sights and sounds around our lovely bush capital. Walking around the suburb with the threat of drones in constant flight above our heads is definitely not conducive to calm and harmony.

For me noise is a major factor -

- the drones are large and very noisy;
- they make a high-pitched whining sound and operate from early morning to evening;
- you can hear them from a long way off, both coming and leaving;
- the drones travel at 120 kph and they sound like a race track in the sky;
- when they do a delivery drop they hover over the site and it sounds like an extremely loud, angry, squealing vacuum cleaner;
- they can be heard from inside closed houses, even those with double-glazing;
- it is worse in summer with the house open;
- noise has been measured from a resident's fence line at 80 decibels while a delivery is being made;
- It is disturbing the peace and quiet of the suburb as well as that of the nature park;
- outdoor entertaining, gardening, walking around the suburb and Stranger Pond was once peaceful but there is now the constant sound of drones flying on service days;
- on delivery days I did not want to be outside in the garden nor go for a walk around the pond, nature park or suburb as it was not enjoyable with the drones whizzing around.

Drone Deliveries

With most Canberra households being in reasonably close proximity to shopping centres, I do not see the need to have drone deliveries to suburban households. To many it would have 'novelty value' as opposed to 'need value'. For those, such as the elderly or infirm who cannot access shops easily, there are many options in place that can cater to their needs eg, community transport, chemist home deliveries, Uber eats, and grocery shops that do home deliveries, as well as numerous online shopping services. The bonus to these types of deliveries is that they can carry larger items in one delivery and without the inconvenience and intrusion to other residents that drones bring.

In today's society where social isolation is becoming an increasing concern from the very young to the elderly, any encouragement to get out and talk with people, even for short periods, and stop isolation should be fostered. It is well documented that social isolation can be a precipitating factor for suicide based on lack of any social networking. Drone deliveries of simple items supports isolating those who may already be lonely and vulnerable by sanctioning them to shut themselves away even more.

Based on drone deliveries in Bonython there were limitations to the Project Wing model such as

- Menu and selection of items available from providers were limited.
- Prescription medication could not be delivered from the chemist provider but only items such as band aids, paracetamol etc.
- If customers order a large meal through the drone service, it took up to five or more delivery drops to complete an order due to weight limits. This constitutes a whole lot of noise for the many people who live on the flight path and around the drop zone.
- If an order is placed from a customer from across the other side of the suburb, up to 150 households or more can be disturbed in the flight path, another 20 or so while the drone hovers and delivers, then 150 or more again for the return flight – and all for one order.

It is a concern that pharmaceuticals such as cough medicine and paracetamol, were delivered without consultation with a professional pharmacist, and with the opportunity for a delivery to be made to the wrong address or even children accessing the delivery.

Consultation and Feedback

There was no community consultation by the ACT Government or any other independent body about the trial taking place. I do not believe that the ACT government at any time considered the impact of the trial on residents of the suburb. Additionally, the ACT Government made no effort or attempt to contact residents at large through an event such as a community forum, or repair any of their issues even after issues had been made public through newspaper articles, TV interviews or direct contact following feedback from the residents.

Wing claimed to provide consultation to residents through organising two outdoor events, however these were not widely publicised and many residents were not aware of these 'consultative' occasions. I am of the opinion that consultation involves discussion between a number of parties and not just being told what has been organised! Those who did go reported only Wing staff promoting the trial and advertising their services. Wing also provided an information 'giving' session to the Tuggeranong Community Council but again only told a 'picture perfect' side of their story. By this time many residents had spoken with people who had witnessed the trial in Royalla and were not appeased by what they said, especially when Wing claimed it to be a 'successful trial' but could not, nor would not provide any evidence to substantiate their claim.

At no time were any Government or other independent authorities available to answer queries. At no time during the whole of the trial was there any independent authority available to accept feedback or seek answers. As were others, I was told to report everything to Wing. This was totally unreasonable as Wing were the very thing that we wanted to complain about! I approached CASA but they would not accept any complaints as they stated that their remit only went as far as safety. I approached AirServices Australia who said that they would not enter into any discussion on the drones as they only dealt with

aircraft. EPA said they could not measure noise levels as it involved aircraft and that was not their responsibility.

Businesses

Why was a project that was allowed by the ACT Government and which involves commercial businesses permitted to have been set up and operate on nature reserve and within the Murrumbidgee corridor? This involves the commercial use of a public nature reserve.

Local business - The chocolate business and coffee franchise, the pharmacy and Mexican food businesses which operated in the drone delivery service were not local to the area and undercut existing businesses that may have had established clientele in the area.

Governing Authority

To my knowledge there was no governing body or agency that Wing was required to report to, or which governed, scrutinised or had any policing authority. I find this quite amazing in this age that there was no entity that did any checks and balances on an overseas company that was running an operation in this country.

Wing, together with ACT Government, did not present any transparency on the drone trial including approvals for the trial to start, trial end date, feedback, incidents and data collection. The public were totally blind to any clarity on the trial and how it was being operated. I do believe that the ACT Government did not know, or bothered to make time to find out, how Wing was operating and they were totally unconcerned and unresponsive to the deluge of resident's complaints and issues.

Privacy

It is documented by Wing that the images recorded from flights and drops are stored offshore for an undetermined time period, or 30 days, depending which Wing site is read. During this period, are there any Australian Privacy Principles that would cover what information is actually stored, who has access to this information, for what purpose? If not, why not?

According to the ACT Human Rights ACT 2004 *"people have the right to privacy under section 12 of the HRA protects people in the ACT from 'unlawful' interference with their privacy . Under international law, the right to privacy has been interpreted as applying in a variety of different circumstances. It has been defined widely as 'the right to be left alone' (the right to live free from interference), and so includes the right to autonomy.*

and, ... *The term 'arbitrary interference' in the right to privacy can extend to lawful interference. Arbitrary interference in someone's private or family life is interference that may be lawful, but is unreasonable, unnecessary and the degree of interference is not proportionate to the need".*

I most definitely feel that my privacy is compromised when I know that drones flying overhead have cameras fitted, the company that was operating the cameras was international and unaccountable to any Australian authority. Wing state ... *The data the camera captures is a low-resolution and greyscale format, and is only available to a small group of engineers for the purpose of analyzing safety and performance criteria. Wing takes privacy extremely seriously and actively avoids capturing any more data than is necessary for the safe operation of its drones.* Images are still being captured which I did not give permission for.

CASA provided Wing with an exemption to the normal rules where drones must remain 30 metres away from people and buildings. While people who place an order for a delivery must remain 2 metres away from the package delivery, I have been walking along footpaths when a delivery is being dropped and this

has caused me to vary my walking route onto the roadway to keep clear of the drone. Also, I did not give permission for the drone to be closer than the normal 30-metre boundary of my family and myself as I did not request that delivery. This I feel is also an invasion to my person as well as a safety risk to me.

DRONES INCIDENTS

I feel concerned that there have been a number of incidents involving drones in the suburb. While I have not witnessed any myself, other than observing a bird attack and being in close proximity to a delivery drop where I had to walk on to the roadway, I have personally spoken with people, have read on the Bonython Against Drones Facebook page and read many other articles that cite incidents involving drones. This makes me feel anxious that potentially an incident could occur around me. It is intolerable to think of the implications of a drone impacting with a child, or anyone for that matter, or onto a moving vehicle that had been in the location at the time.

I am aware of incidents that have been reported by residents and/or have been posted on Facebook include

- Deliveries to the wrong address
- Bird strikes
- Spilt hot drinks
- Drone crash on a non-customers driveway
- People being followed in public areas by drones
- Drone flying so low that it nearly caused a resident to drive off the road.

Wing openly state that there have been no problems with bird strikes during the trial yet there is video evidence on the Bonython Against Drones Facebook page where residents have taken video footage of magpies attacking drones, and I myself saw this occur.

EFFECT ON MENTAL HEALTH

In a world full of stress it should not be overlooked that one of the easiest strategies of managing stress is by creating a peaceful home. While it is not always possible to control our environment, those of us in the Canberra region appreciate and have chosen to live in our relative serenity. Shutting out the chaos of a busy work and social life or a hectic schedule is paramount to survival in our increasingly hectic lives. It is well documented that noise affects our general health, our physical and psychological wellbeing. Constant exposure to environmental noise can cause heart problems, hypertension (high blood pressure), stress, aggression, anxiety, antisocial behaviours and sleep disturbance as well as flow-on effects of any of these health problems.

I have personally noticed the effect that it has on my husband. His demeanour and character definitely changed on delivery days due to his anger and frustration every time he hears a drone fly over. I myself am on the alert each time I hear the high-pitched drone sound and do not relax until it is gone. There are many noises, particularly from the TV, that sound 'drone-like' and now trigger an instant anxiety response in me. It is not fair that we now live in a constant state of dreaded anticipation on the days that drones fly. There have been occasions that my husband and I have gone out for the day, leaving the comfort of our own home just to get away from the noise and irritation that the drones bring. We have even had guests, including our children and grandchildren, who are annoyed by the constant buzzing. We have two outdoor entertainment areas that were not used at all on flight days, leaving us to stay inside with the air-conditioning on. We did not want to be outside!

There is no way that my husband or I could have a rest during the day as it is really disturbing to be woken to the high-pitched drone sound.

In my role as a NHW delegate, I was working with ACT Policing on a stall at an event in Erindale Shopping centre in Oct 2108. Two males, at different times, approached the police to talk about the drones. The police redirected them to me due to my local association with them. Both males stated in front of the police officers that they would buy a gun and shoot them down. This was so very concerning that people would resort to extreme measures such as this and speak about it so blatantly in front of police officers. I believe that this shows the frustration and anger that built up in regard to the drones. I have also spoken to many others who have made menacing statements about the drones, out of sheer desperation of their state of anxiety.

2) The economic benefit of drone delivery technology being tested in the ACT including;

a. The investment that has been brought in to the Territory

I am aware that there were approximately 160 residents signed up to the trial and cannot see how potential earnings from what is approximately 10% of the houses in Bonython could constitute any economic benefit. As delivery during the trial period was for free and this may have tempted some to sign up, factual data cannot be assessed on any economic benefit.

As Wing is an American company and profits would not be held here, and the manufacture of drones is not Australian, I do not feel that there would have been any economic benefit of note to the ACT.

b. The number of jobs that have been created as part of the trial

Wing state that it has created jobs for the ACT however there were no actual facts produced to support this. The few jobs that were created for the trial could equal the jobs that may have been lost to local businesses. I fear that there may actually be job losses especially for those who are currently employed in the delivery industry. As this is often covered by base-skilled employment and casual jobs the disadvantage to those people could be detrimental.

c. The extent of collaboration with local industry and academic institutions

I am not aware of nor could foresee any collaboration with academic institutions other than approaching local high school or colleges for students to work part time.

3) The extent of regulatory oversight of drone technology at various levels of government including;

a. Local authorities such as EPA, Worksafe, Access Canberra

- I am aware that EPA was approached by residents to undertake noise testing of the drones but would not accept any responsibility or take action as they were not regulated to monitor 'aircraft' noise.
- I contacted a number of government officials and everyone I spoke to was unaware of any actual rules and regulations for the trial. They also appeared to be totally uninformed on who was responsible for overseeing the trial. This I found to be correct as no one was overseeing it.
- Drone technology is developing so swiftly that we must err on the side of caution when it comes to regulating it, especially the importance of public safety through risk management. Research released by RMIT in Victoria on 24 August 2016 states that technical problems are the primary cause for accidents with drones – usually a breakdown in communication between the drone and its controller. With the imminent future of other drone delivery companies expanding into our skies there is an urgent need for reform into commercial drone delivery systems. Amazon, Dominos, Australia Post are examples of other large businesses that have plans to move into the skies, therefore it is apparent that preventative and appropriate legislation and regulations are needed for these unmanned systems.
- CASA drone rules state that drones are not to come within 30 meters of people. This demonstrates known safety concerns however they still have changed the rules to suit Project Wing, yet there is no one body who is over-sighting Project Wing.

- The ACT Government did not regulate Wing operations nor did any other entity. Wing was a law unto themselves and, other than safety reports to CASA, they were not reporting to any government authority. I do not believe that any final report on the trial will be forthcoming as Wing state they 'will only provide a summary' at the end of the trial. If the ACT Government approved a trial, it was carried out in the ACT, and it involved ACT residents, a review of that trial should be undertaken.
- There appears to be no one entity that will come forward to reveal that they approved the trial and all it stands for. We know that CASA granted exemptions on a number of rules for drones but we do not know who authorized the exemptions to be made and under what conditions.
- In my Neighbourhood Watch role, many residents also reported to me that they had written or contacted the ACT Government and had received no response, or feeble responses to their issues. This was mostly directed at Mr Gentleman's office. As mentioned previously, I also had a similar reaction to a letter that I had written to him. It appeared that no one in the ACT Government knew what was going on with the trial and could not therefore adequately respond.

b. Commonwealth agencies such as Air Services Australia, Civil Aviation Safety Authority

- I contacted CASA to no avail and they would not accept complaints due to their not having the remit on anything other than safety and I was referred to Wing for information on exemptions for the trial.
- I contacted Airservices Australia and was told that they did not handle complaints and referred me to CASA.
- There was no practical or informative support provided by either of these organisations. I felt totally disregarded by both of these agencies.

4) The extent of any environmental impact as a result of trialling drone delivery technology on;

a. Residents within the trial area

As stated in my previous comments, lack of consideration by the ACT Government, noise pollution, invasion of privacy, safety and security concerns and mental wellbeing have had a major impact on the residents of Bonython.

b. Native wildlife

- I have witnessed birds swooping and aggressively attacking the drones, particularly during breeding season.
- The bird life throughout the local nature park and around the suburb has significantly decreased since the drones have been operating.
- The effect of the drones on bird life in the area is immediate on drone flying days, then it takes a couple of days for birds to start reappearing only to have another delivery day and they are gone again.
- As a regular walker around Stranger Pond since I moved here nearly 10 years ago, I have watched with interest as the bird life on the pond grew with swans nesting, and heron, egret, ibis, cormorants, pelicans and other water birds regular seen on the pond. For the period that the drones were operating there was only really common ducks and coots on the pond. Being on the fringe of the nature park we regularly had parrots and other native birds in our garden and these all disappeared other than choughs that seem to monopolise the trees where native birds had previously been. I have a birdbath outside my office window that is frequented regularly by wrens, larks, robins, honeyeaters, magpies and parrots and noted that since the drone trial started not one bird would fly in.

- I feel very sad that the impact on birdlife has been so enormous, leaving our surrounds bare of sounds of nature.

c. Domestic animals

- It was reported to me as Area Coordinator for Bonython Neighbourhood Watch by a number of residents that their dogs are spooked and distressed when the drones are around. I also received grievances by other residents about dogs barking constantly on delivery days and they were asking what they could do about it.
- I can attest to dogs around my neighbourhood constantly barking on drone delivery days and often started before I even heard a drone flying.
- It is concerning that peace and quiet in a neighbourhood is broken by consistent barking, but it is also worrying the potential damage to property and gardens, as well as suffering and distress that the dogs must be experiencing.

5) Ways to improve the use of drone delivery technology within the ACT

In our modern world drones can be utilised for many services such as

- Bushfire management
- Agriculture management
- Emergency services
- Delivery of goods to remote communities
- Media
- Geological management
- Warfare

I do not believe that the use of drones in a suburban area for home deliveries is workable or effective.

6) Any other relevant matter

- The ACT Government imposed this trial on Bonython residents with no prior details about the trial taking place, or any consultation or consideration of the impact on people's lives. This indicates a failing on their part to be committed to the concerns of constituents and the local environment.
- We should have the right to freedom to live without the physical and psychological threat from noise, safety and privacy by technology that has been forced on us by a Government who only wants to get runs on the board as being innovative, without due care and concern for their constituents, **those who they should be trying to protect!**
- I am definitely NOT against drone technology and believe that it can play an important part in our future but definitely do not think that home deliveries in built up suburban areas rank in any importance or are realistically practical.
- I do believe that Wing have been granted free rein in the ACT and have ingratiated themselves through their largess with offerings of funding for community events and a percentage of profits for deliveries made.
- The current legislation surrounding drones is immature and it needs serious interrogating and reviewing. This should be done as a matter of urgency BEFORE any further drone deliveries operations are allowed to continue.

Thank you for raising the Inquiry into Drone Delivery systems in the ACT. I appreciate the opportunity to provide my comments to your Inquiry

Carol Vincent



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 090

Date Authorised for Publication: 27 February 2019

Howard Pender

9/7 Mugglestone Pl Bruce

ACT 2617

Convener, Australasian Centre for Corporate
Responsibility (ACCR)

Chair, ACT [REDACTED]

[REDACTED]

Email: [REDACTED]

Committee secretary, ACT Legislative Assembly

Standing Committee on Economic Development and Tourism

Email: committees@parliament.act.gov.au

Attention: Committee Secretary

LACommitteeEDT@parliament.act.gov.au

RE: Inquiry into drone delivery systems in the ACT

This submission is personal. The views expressed below are solely mine - they do not represent the views of any of the organisations I am involved with.

I write solely to comment on term of reference (b) economic impact and (d) environmental impact in the context of submission number 12 - a paper 'The Potential Impact of Delivery Drones in the ACT'.

The point I wish to make is that the heading of the paper is a misrepresentation of its content.

The content of the paper contains an attempt to quantify selected benefits of drone delivery. I do not dispute its contention there may be some productive efficiency benefits to permitting drone delivery which may result in some gross consumer and social benefits. However, this paper claims to deal with the **impact** of drone delivery including benefits for consumers and society (see p 7). This claim is completely inaccurate. An assessment of **impact** requires an assessment of net benefit and this paper fails to calculate let alone demonstrate any **net** benefit.

The paper purports to assess the impact on local businesses. It claims drones will result in a reduction in the savings rate of ACT consumers thus generating increased sales claimed to be in the order of \$30 - \$40m. This claim is implausible and entirely unsupported. More likely, in regard total sales, against a benchmark of no or slower uptake of drone delivery, some local businesses will benefit at the expense of others with no plausible change in total retail sales. The main impact of permitting drone delivery is to change relative prices between delivery methods. There is no reason

given, and there is no reason to suspect, the savings rate of ACT households is sensitive to such a change in relative prices. The claim in the summary on page 5 'Grow retail sales' is dubious.

It also claims to assess the benefit for consumers. This gross benefit, stated as \$5m on p 5, rests on a calculation of the fraction of deliveries that will be undertaken by drones as a consequence of consumer preference for rapid delivery. The paper assumes drones will account for 3 ½ deliveries per household per month by 2030.¹ This calculation is based on estimates of fractions of delivery by different modes in 2030. See p 30. No benchmarks are given to compare these assumptions against current delivery mode composition by timeliness. There are, however, reasons to suspect that the willingness of the overall population of the ACT to pay for rapid delivery might continue to diminish² by 2030 with the substantial ageing of the population.³

Any reasonable assessment of the **impact** of hypothetical regulatory arrangements to permit commercial drone delivery in residential areas requires an assessment of the following:

- (1) consequent expenditure on noise reduction eg installation of noise glazing by residents seeking to endeavour to maintain their current level of quiet enjoyment of their properties inside their dwellings⁴ as well as the value of loss of amenity suffered by those who do not install noise glazing;
- (2) cost of loss of amenity of reduced level of quiet enjoyment of private property outside dwellings in residential neighbourhoods;
- (3) cost of loss of amenity from reduced level of enjoyment of natural environment.
- (4) cost of regulatory structures necessary to ensure whatever environmental constraints on drone flight paths and time of use are complied with.

None of these factors have even been mentioned in this report.

This report makes no attempt to assess the Impact of delivery drones in the ACT. Its title is inaccurate.

Yours sincerely

Howard Pender

¹ See p 13.

² As it has since the days of near universal bread and milk delivery to households.

³ See <https://apps.treasury.act.gov.au/snapshot/demography/act> .

⁴ it is not difficult to see that these costs could be significant and dwarf the estimated gross benefit to consumers calculated by the authors of this paper. In 2016 there were approximately 155k private dwellings in the ACT, see http://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/CED801 . If the residents of 10% of these dwellings felt obliged to purchase noise glazing to maintain their current level of quiet enjoyment inside their own properties at an average cost of \$10,000 the total cost would be \$155m. If they undertook this expenditure at a rate of 1% of total dwellings per year for 10 years the cost would be \$15.5m per year ie 3X in excess of the annual gross consumer benefit estimated in this paper. \$10,000 per dwelling would not be sufficient to noise glaze all the windows in a freestanding dwelling from the quoted noise levels caused by the drone trial.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 091

Date Authorised for Publication: 27 February 2019



Submission by the Hackett Community Association
to the
ACT Legislative Assembly
Standing Committee on Economic Development and Tourism

Inquiry into drone delivery systems in the ACT

21 February 2019

Dear Members

The Hackett Community Association (HCA) welcomes your inquiry into the drone delivery systems in the ACT and would like to provide this submission for your consideration. The main focus of this submission is on how frequent intrusions of large commercial drones could impact on the suburb of Hackett, its residents, its wildlife and the adjacent Mount Majura/Mount Ainslie Nature Reserve, should the delivery system expand to north Canberra.

Background about the HCA

The HCA, established in 2002, is the official representative organisation for the suburb of Hackett for dealing with the ACT Government. Its mission is "Promoting the well-being of the Hackett community by protecting and enhancing the social, cultural and physical environment of Hackett." It is affiliated with the North Canberra Community Council and is registered under the *Associations Incorporation Act 1991*, association number a03925.

As at the end of 2018 it had around 220 registrations (each registration represents a free standing dwelling or unit and may include individuals or couple). With around 1,144 dwellings in Hackett, this represents approximately 20% of dwellings.

The HCA is aware of the trial that was undertaken in Bonython in 2018 and has noted that the majority of residents in that suburb have had negative experiences with this. The HCA is also aware that the same company is planning to start an operation in Mitchell to provide deliveries to several suburbs in Gungahlin by mid 2019.

The HCA notes that the current drones can travel up to 10kms on a round trip. It is possible that the Mitchell operation could be expanded in future years to the suburbs of north Canberra, including Hackett which is under 5kms from Mitchell. It is within this context that the HCA would like to make the following comments against some of the Terms of Reference.

TOR 3. the extent of regulatory oversight of drone technology at various levels of government including but not limited to:

Safety of residents and property

One of the key concerns is the safety of these large drones when they fail and crash. The chances of such incidents occurring must surely correspondingly rise with increased usage. In rural and open areas, the impact on people and infrastructure would be limited. However, in an urban environment the risks must be significant. A large drone crashing into pedestrians, people in their gardens, or cyclists could be fatal; a drone crashing onto a car could also be fatal.

What happens when a drone crashes into power lines – for suburbs in Gungahlin this may not be an issue as power lines are mostly underground. For Hackett and other north Canberra suburbs, power lines are mostly above ground and as such there would be greater risk for residents in such an event. And what would happen if a drone crashes onto the power lines for the new light rail which passes Mitchell as well as Gungahlin?

The inner north suburbs like Hackett also have well established, dense tree cover along most streets and in many gardens. Combined with the presence of power lines, such features must surely make the operation of drones in these areas much more difficult and therefore increase the likelihood of crashes occurring.

A drone crashing into a house may pose a lower risk to people, but depending on the features of the house, there is potential for significant disruption to the residents. For example, a drone crashing into solar hot water panels and PV panels could lead to major inconvenience while residents wait for repairs or replacements. Potentially several thousands of dollars of inconvenience for the convenience of a \$4.00 coffee latte delivered to a neighbour!

One of the participants in the Bonython trial was a chemist. Many pharmaceutical products can only be obtained on a prescription – at the time of collection in a chemist, the receiver (either the patient or a representative) must sign the form. In the case of the drone delivery in Bonython, did the drones deliver prescription drugs and were these signed by the patient or agent? If such a requirement was not done, then how does such a delivery service ensure the drugs are delivered to the correct person? Furthermore, in the event of a drone crashing, what would happen if such prescription drugs were picked up by children?

Potential conflict with commercial flights

Hackett and Watson sometimes have low flying small planes and helicopters going overhead, either departing from or arriving at the Canberra Airport. The operation of commercial drones in these suburbs would increase the risk of an air incident. As such, strict controls should be put in place for the operation of drones in these areas.

Hacking

Hacking of computers is almost a daily occurrence be it on individual computers, private companies, or governments at all levels. As hackers develop their skills, it is highly likely that they will soon attempt to hack drone systems for mischief or terrorism. The risk of the above incidents must surely increase through the hacking of the equipment.

Regulation by CASA and Air Services Australia

The above examples highlight the need for commercial drones to be controlled not only at a local level but more importantly, at a national level. CASA and Air Services Australia must be engaged well before drone deliveries are expanded to other suburbs in Canberra. This will ensure a nationally consistent approach to managing these systems should there be interest in using them elsewhere in Australia. Please refer to the comments under TOR.6 National approach to management of drones.

TOR 4. the extent of any environmental impact as a result of trialling drone delivery technology:

Impact on residents

One of the most enjoyable features about Hackett is the generally low level of noise. This is largely due to the close proximity to Mount Majura/Mount Ainslie and the long distance from major roadways like Northbourne Avenue.

True, there is the noise from planes taking off from Canberra Airport, and the usual sound associated with urban living such as motor mowers and small equipment. Residents accept this as part of living in cities and towns. However, this peaceful environment would be shattered with the noise from dozens of drones operating 12 hours a day, seven days a week. People's stress levels are likely to rise and in areas where regular deliveries were being made to a few houses, it is possible that neighbours could verbally or physically clash. Such consequences would not be conducive to maintaining a friendly and open community.

Impact on native wildlife

Given the close proximity of Hackett to the Mount Majura/Mount Ainslie Reserve, the suburb has a number of native species of wildlife that live in or visit the suburb:

Kangaroos – large numbers (50-80) of eastern grey kangaroos come down from the reserve to feed at the Hackett Oval, particular during dry periods when green grass is limited. Although this movement is mostly in the evening, some do remain until dawn before returning to the reserve. At times, some of the larger roos will simply stay in people's gardens close to the reserve.

While drones are being used in national parks and rural areas for research and monitoring purposes, in such an environment kangaroos are able to move freely away if they feel disturbed. Furthermore, the frequency of such drone use may be at a level that may not impact upon kangaroos.

However, in an urban setting, the frequent occurrence of low flying, noisy drones may frighten kangaroos causing them to move off in random directions, increasing the risk of collisions with motor vehicles. Overtime, they may reduce their visits to the suburb, placing increased grazing pressure on the reserves and taking away one of the great features of Hackett. Further studies are required to assess the impact of drones on kangaroos, particularly in an urban setting.

Birds of prey – Mount Majura/Mount Ainslie Reserve is home to eight species of birds of prey, ranging from the largest, the wedge-tailed eagle, to the smallest, the nankeen kestrel. Some of these are often seen soaring over Hackett, particularly in the areas closest to the reserve.

There are some You Tube clips showing large eagles attacking drones and knocking them out of the sky. Some of these drones appear small and would appear to have come off second-best. However, the drones used in the Bonython trial are very large and as such, a large eagle may be injured or killed should they attack such a drone. Smaller species are more likely to be injured or killed.

The numbers of birds-of-prey in the reserve are probably relatively low, particularly for the larger wedge-tail eagle. The loss of only one bird would impact significantly on abundance of this species in the reserve.

Given the potentially significant impact on these species, delivery drones should not be allowed to operate close to nature reserves, to avoid conflict with birds of prey.

Other birds - The HCA understands that drones can also impact on other birds species in a number of ways such as:

- the high pitched sound causing birds to abandon nests and eggs and chicks;
- interrupting feeding; and
- collisions with flocks.

On this last point, Hackett is home to, and visited by, many large flocks of parrot species including sulphur-crested cockatoos, galahs, little corellas, yellow-tailed black cockatoos, king parrots, rosellas, and smaller numbers of the critically endangered swift parrot. They are either permanent residents or move back and across the suburb, travelling from the reserve into Hackett and neighbouring suburbs to feed. Drones in the suburb may lead to collisions and may cause the birds to move to other areas of Canberra.

Domestic animals

Like most Canberra suburbs, the residents of Hackett have a range of household pets such as dogs, cats and birds. Frequent, noisy drones are likely to cause these animals to react in a variety of ways. Some may run away from their home, which will cause undue stress for their owners until they are found. In the case of dogs, some may begin barking as drones pass overhead. This not only causes stress for the animal but will increase tension among neighbours having to not only put up with the noise of drones, but barking dogs.

TOR 6. any other relevant matter

Privacy and domestic violence

Commercial airlines have clear, unique colour schemes and names that help identify them from a distance. Likewise, any commercial delivery drones should also have clearly displayed names and livery schemes to identify them from non-delivery drones. For example, drones could be used to watch people at their houses. In an extreme situation, an abusive partner may use a drone to spy on an ex-partner.

While a delivery service drone could be used for the same purpose, having a unique livery identification could assist police in tracking any suspect drone activities in an area.

In this locality there is a women's shelter and a crisis accommodation centre for men. The HCA is not aware of these facilities being targeted over the years by ex-partners, but the arrival of drones may provide a new means for such activity.

Such a situation highlights the need to have commercial drones registered, with clear identification and more importantly being managed at a national level. Appropriate legislation needs to be in place to prevent the occurrence of such illegal surveillance activities.

National approach to management of drones

In Federal Parliament on 12 February 2019, the Member for Canberra, Gai Brodtmann, made an important recommendation calling for "an independent review before the Gungahlin pilot -led by CASA and the Privacy Commission and involving the relevant federal and territory government agencies." Ms Brodtmann proposed that such a review would look at:

- the regulatory framework, particularly for commercial operators;
- privacy issues, particularly regarding where the data is being stored, what data is actually being captured, what happens to the data and at which location it is being stored;
- the economic benefits to the ACT, particularly for local small businesses.

The HCA supports the proposal for a national review as outlined by Ms Brodtmann and would like to see the inquiry make such a recommendation.

Chris Mobbs, Chair, Hackett Community Association



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 092

Date Authorised for Publication: 27 February 2019



the green institute

Submission to the Inquiry into Delivery Drones Standing Committee on Economic Development and Tourism

Submission from:
The Green Institute Ltd
Tim Hollo
Executive Director

GPO Box 557
Canberra, 2601

ph: [REDACTED]

e: [REDACTED]

This submission may be made public.

Executive Summary

1. **Moratorium:** It is so often the case with new technology that the promises of developers and the reality experienced in the community and the environment do not match. Given the substantial concerns about potential impact on quality of life for residents, on wildlife, on privacy, etc, there should be a full moratorium on any further operations of delivery drones in Canberra until truly independent reviews can be completed into a range of claims, and until a wide-reaching democratic process of consultation with the community has been undertaken.
2. **Review of emissions impact claim:** The environmental benefits in terms of greenhouse gas emissions of new methods of consumption such as drone delivery remain disputed. Claims by proponents tend to assume replacement of one form of consumption with another, instead of an increase in consumption – an assumption which does not necessarily match reality. A full, truly independent review should be undertaken.
3. **Review of impact on wildlife:** It appears that no study of the impact on wildlife in Canberra from large scale drone delivery has been undertaken. This must be done, independently, before any expansion can take place.
4. **Concerns regarding public and private space:** Communities in Canberra and elsewhere are increasingly concerned about the encroachment of for-profit companies into public and private space. No expansion of delivery drones to scale, allowing large numbers to fly over public roads and parks, as well as private homes, should be allowed in the absence of clear public support, demonstrated through thorough consultation. Individuals should have the ability to declare their homes and shared spaces “no fly zones”.



the green institute

1. Introductory remarks

Just because we can do something doesn't necessarily mean we should.

Technology gives us the power to do more things than we could have imagined. The remarkable speed of technological development means that our democratic, regulatory and ethical responses are increasingly left to play catch up in its wake.

Drones, in the right time and place, can be brilliant – even life-saving. They can, and do, play an important role in emergency services, disaster management, the creation of art, scientific research, and more. They can be, and are, also used for illegal purposes, such as smuggling.¹ The delivery of takeaway meals and coffee sits somewhere in this spectrum between life-saving and dangerous.

It is clear that regulation and oversight will be critical in the management of drone technology, from one end of the spectrum to the other – ensuring that emergency services drones can operate safely, working to prevent the use of drones for criminal purposes, and regulating use across the spectrum in between. This must be driven by independent analysis and democratic processes. We must not act on the promises of proponents alone.

In the current circumstances, where the trial in Bonython caused considerable angst, and where the promises of the proponents have not been tested, there should be a full moratorium on the expansion of the project into Gungahlin until rigorous independent analysis and consultation has been undertaken.

2. Suitability of Canberra

Term of reference 1(a)

Canberra is proud of being the bush capital. Our housing is not very dense, interspersed with plenty of trees and birdlife. With increasing urban infill, the community is insistent on maintaining green space, for quality of life and for the wildlife. People love the peace and quiet of living in Canberra compared to other capital cities.

Into this environment, Project Wing suggests bringing 11,000 flights per day by drones.² Assuming a generous average of 13 hours of operation each day, regardless of weather, this equates to one flight every 4 seconds throughout the whole day. As discussed below, the impact on wildlife of this incursion is as yet unknown, although anecdotal evidence is that the far lower number of deliveries in the Bonython trial had a substantial negative impact on bird numbers.

¹ *Delivery Drones From A Technology Assessment Perspective: Overview Report*, Institute for Technology Assessment of the Austrian Academy of Sciences,

² Evans, Steve, "Report predicts more than 10,000 drone flights a day", *Canberra Times*, December 10, 2018.



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The impact on quality of life for those living under the flight path would be dramatic. One drone flight every 4 seconds across Canberra would render the city unrecognisable.

A further concern related to Canberra is the presence in our city of politicians, diplomats, senior public servants, military personnel, and sensitive infrastructure. The impact of very large numbers of delivery drones on privacy and security in this context, as well as the broader social context, should be specifically taken into account.

3. Potential environmental impacts

Term of reference 1(d)

Proponents of new technologies often argue that they will reduce the impact on the environment, but their claims do not always stack up. They often make assumptions about replacement of other activities which are not borne out in practice, and not uncommonly count benefits in some areas without also counting disbenefits in others. The claims need to be independently verified.

3.1 Promises vs reality in greenhouse gas emissions

Project Wing's commissioned research claims that, at scale, drone delivery across Canberra could reduce emissions by 8000 tonnes a year.³ This figure is based on the extraordinary number of flights noted above – one every 4 seconds during daylight hours across the city. Fewer flights will obviously lead to lower emissions reductions.

Most critically, these projected emissions reductions are dependent on the assumption that the flights would replace deliveries by other means – primarily car or truck. However, experience around the world has shown that new technological options can increase total demand rather than replace existing demand. One such study showed that Uber, which is promoted partly on the basis of reducing congestion, actually increases congestion as it outcompetes public transport, walking and cycling more than it outcompetes taxis or personal driving.⁴ The ease of being able to order a takeaway coffee or burrito from home, to be delivered by drone, is at least as likely to increase consumption of such goods than to replace existing delivery or pick up. If even half of expected usage is additional consumption rather than replacement, the expected emissions reductions will be halved. This underscores the need for independent study and verification.

³ AlphaBeta, *Faster, Greener and Less Expensive: The Potential Impact of Delivery Drones in the Australian Capital Territory*, commissioned by Project Wing, November 2018

⁴ Wolfe, Sean, "Uber and Lyft are creating more traffic and congestion instead of reducing it, according to a new report", *Tech Insider*, July 28, 2018.



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An additional factor already experienced in Project Wing's trial is that the drones cannot carry heavy weights or large quantities. This seriously limits the service's capacity to replace any major deliveries such as family meals or groceries, and each delivery needs at least one flight – or sometimes “a fleet of drones”,⁵ with concomitantly greater environmental and social impact.

Despite these factors, it is not unlikely that there will be some emissions reductions from a shift to drone delivery, albeit likely not as substantial as those projected by proponents. But there are also other ways of achieving this positive impact without the range of negative impacts drones also cause, such as supporting and encouraging cycling and walking, redeveloping local shopping centres to support local businesses, encouraging eating in rather than takeaway, etc.

Before allowing drone delivery to take hold on the basis of claims of reduced greenhouse gas emissions, a full, independent study should be undertaken, examining realistic numbers of flights and seeking to quantify replacement vs increased demand. The results of this study, not the claims of proponents, should inform any final decision.

3.2 Impact on wildlife

When discussing impact on wildlife, proponents of delivery drones tend to refer only to the highly unlikely events of collisions with birds, or birds attacking drones. The far greater impact is likely to be the presence of large numbers of big, noisy drones scaring bird populations away from the areas where deliveries are taking place. Anecdotal evidence from Bonython certainly suggests that this is the case. I myself have witnessed it in a national park, when a smaller camera drone launched by people nearby scared away birds.

While there has been no major study of the impact of large delivery drones on bird populations, recent studies into the use of smaller, quieter scientific drones for the purposes of studying wildlife have urged caution.⁶ While scientific drones are a tremendously useful tool, they can also have negative impacts on the populations they are studying, and must be used carefully.

Before allowing drone delivery at scale in Canberra, a full, independent study must be conducted into the potential impact on wildlife – particularly bird life – in the bush capital.

⁵ Element, Bree, “Drone coffee: Does it spill? Is it hot? A special investigation”, *Canberra Times*, December 10, 2018.

⁶ Hodgson, Jarrod, and Lian Pin Koh, “A guide to using drones to study wildlife: first, do no harm”, *The Conversation*, May 23, 2016.



3.3 Waste-streams

It is notable that, among the environmental impacts itemised in the terms of reference, the potential for dramatically increased waste streams from the increase in take-away and delivery caused by drones does not rate a mention. This is in the context of the ACT seeking to be seen as taking waste seriously by working towards banning single use plastics.

Every delivery via drone will involve at least as much packaging as a car or truck delivery, and likely more than a pick up. If, as can be expected, drone delivery increases rather than replaces consumption, the increase in packaging waste will be that much greater.

Additionally, Project Wing has proudly declared that, when only one coffee is ordered, a free plastic bottle of water is added to the order, “to balance it out”.⁷ No attempt is being made to even take into consideration, let alone reduce, waste streams.

Any serious ACT strategy to reduce waste streams should not involve supporting a technology that will increase waste streams. If drone delivery is to go ahead, the government should mandate extended producer responsibility to ensure that there is no increase in packaging waste.

4. Privacy concerns and encroachment on public and private space

Term of reference 1(g)

Communities in Canberra and elsewhere are increasingly concerned about the encroachment of for-profit companies into public and private space. Any expansion of delivery drones to scale would see large numbers of drones flying over public roads and parks, as well as private homes, filming as they go, with no oversight of what happens to the information collected by a globally dominant data company based in the USA. This concern is only greater for Canberra, as the national capital, home to politically sensitive people and infrastructure.

No expansion or permanent siting should be allowed in the absence of clear public support, demonstrated through thorough consultation. This does not entail the proponent simply turning up to Community Council meetings, but must involve government-run active approaches to the community, sharing full information, including the results of the independent studies.

Just as with the “do not call register”, people and communities should be able to designate their homes and shared spaces “no fly zones” which drone operators will be legally obliged to avoid.

⁷ Element, Bree, “Drone coffee: Does it spill? Is it hot? A special investigation”, *Canberra Times*, December 10, 2018.



the green institute

5. Summary

The Green Institute submits that, for all the above reasons:

1. **Moratorium:** Given the substantial concerns about potential impact on quality of life for residents, on wildlife, on privacy, etc, there should be a full moratorium on any further operations of delivery drones in Canberra until truly independent reviews can be completed into a range of claims, and until a wide-reaching democratic process of consultation with the community has been undertaken.
2. **Review of emissions impact claim:** a full, truly independent review into the greenhouse gas emissions impact of delivery drones should be undertaken, examining realistic numbers of flights and seeking to quantify replacement vs increased demand. The results of this study, not the claims of proponents, should inform any final decision.
3. **Review of impact on wildlife:** a full, truly independent study of the impact on wildlife in Canberra from large scale drone delivery should be undertaken. The results of this study, not the claims of proponents, should inform any final decision.
4. **Concerns regarding public and private space:** no expansion of delivery drones to scale, allowing large numbers to fly over public roads and parks, as well as private homes, should be allowed in the absence of clear, informed, public support, demonstrated through thorough consultation.
5. **No fly zones:** individuals, groups and communities should have the ability to declare their homes and shared spaces “no fly zones” which drones must avoid.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 093

Date Authorised for Publication: 27 February 2019

From: [David Mitchell](#)
To: [LA Committee - EDT](#)
Subject: Drone inquiry
Date: Thursday, 21 February 2019 5:25:48 PM

Thank you for the opportunity to voice my concern in regards to the prospect of commercial drones.

Apart from the question of noise and safety our main concern is privacy. Whilst noise and safety might be able to be addressed and rectified, privacy will be difficult, if not impossible, to regulate and police.

Whilst supposedly delivering coffee around a suburb it is entirely possible for a drone to collect information and data about any or all of the residential blocks that it passes over. This will always have a commercial value and the temptation to absorb and store it will always be there, for others to utilise and for their benefit only. Worst case scenario would be for use in house break-ins by sophisticated thieves who can monitor your movements!

Technology already exists for photography to combine with face-recognition apps. Coupled with your address this will allow the easy theft of your identity- simply by looking up at a passing overhead drone!

David Mitchell

[REDACTED]

[REDACTED]

Sent from my iPad



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 094

Date Authorised for Publication: 27 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	
Postal Address:	
Phone:	
Email: (if applicable)	

Optional:

How long you have lived in the area:	
Occupation:	
Any other background information:	

NOTE: Most submissions are made public once they are submitted. If you do not feel comfortable identifying yourself, make it clear in a covering letter that you wish your submission to remain anonymous. Your submission may still be made public but your personal details won't be.

What you can include in your Statements:

Below are some points that you may want to include in your submission -

- Why you are writing to the Inquiry: e.g. you live in the area, you have pets, small children, medical concerns etc.
- Issues and concerns, e.g. privacy, data collection, safety, pets and wildlife.
- Any problems, or how the drone deliveries have affected you and your household.
- The location of your home to the flight path.
- Examples of the impact it has had on you, e.g. noise, feeling angry or unsafe, animal behaviour, neighbour relationships.
- Detrimental social impact in the community when many neighbours are now at loggerheads.
- Selfishness of one person to get a delivery at the expense of so many households.
- Why you think it is not feasible for drone deliveries in a suburban area eg sensibility of delivery of minor or one off consumables when a large shopping centre is so close.
- Your feelings on the consultative process by Project Wing and the ACT Government.
- Lack of regulations and monitoring of the trial.
- No independent authority to provide feedback.
- Concern and risks of delivery of chemist items.
- Suggestions or improvements.
- General comments.

I would like to comment on the following terms of reference:

- 1) The decision to base the trials of the technology in the ACT and surrounding region

I live in Bonython. I received no advice (written or otherwise) from either the ACT Government, CASA or Project Wing about the proposed trial. Wing subsequently claimed that this was because I have a 'no junk mail' sticker on my letter box. Apparently they have more respect for this sticker than they do for my rights as a resident in a suburb they intended to treat like lab rats.

Much of the information about the trial I have found out through word of mouth. Even Project Wing's website is sparse in information and was out of date for much of the trial. I pointed this out to them, and their response was it would be updated later in the year. Astounding, given their parent company is a major proponent of global information dissemination.

Immediately I became aware of the proposed trial, I contacted Project Wing, CASA and ACT MLAs seeking information, and expressing my concerns.

- Wing has responded to only 2 of my emails – I've sent at least six. The responses are usually PR glossy statements that have very little substance to them. They certainly did not answer my questions such as: a) how long the trial would go for; b) what criteria would be used to evaluate the trial; c) what written information had been provided to Bonython residents about the trial; d) whether Bonython residents would have an opportunity to put their views forward before the trial was concluded to inform whether the trial warranted further extension or expansion; e) whether the evaluation would be independent; f) whether the evaluation and findings be made public; and so on.

Wing has routinely been unable or unwilling to provide answers to straight forward questions which would be included in any project management and risk assessment plan for a project of this value – I think they have the answers, they just don't think they have to share them. Residents have been treated with total contempt – unless they were a tester.

I know someone who registered interest as a tester to better understand what the trial was about (given the lack of information in the public domain). Wing did not contact this person for over three months, and then contact was made offering to help with set up of the App that weekend. Wing was ready to start selling product! Customer service and good communication does not appear to be a strong value for Wing.

- CASA responded that they were only responsible for regulating the air space, and had given Wing an exemption to use the space for a trial. They could not answer other questions, and referred me to Wing for answers. This is an 'all care/no responsibility' attitude for the trial. It demonstrated no respect or concern for the experience of residents who had no say on whether this is something they wanted conducted in their suburb.
- ACT government MLAs variously responded lauding the benefits of drone technology to the isolated, the disabled and so on in our community. The contra side to this is the further breakdown of human interactions and community integration as now this can all be managed by machines, no need to communicate at all.

None of the MLAs that responded took concerns raised seriously and thought 'fob off' answers were sufficient. And they suggested I contact Wing with my questions and issues, which given Wing doesn't respond to most questions, it put residents in a circular loop with no one taking responsibility for the decision, the longer term outcomes, and the needs and concerns of ACT residents. Many of these responses were also ill-informed, as we then saw a flurry of members meeting with Wing to seek reassurances to questions of noise, safety, privacy and so on. I expected better of my elected representatives – but now realise that they set a low bar in their work.

In my view, there has been no substantive communication or consultation on this trial with Bonython, or indeed Canberra residents by the groups involved in the conduct of this trial. There has been a complete lack of responsibility, accountability and transparency about the process, the decision making and why this trial by a global multi-billion dollar American company should indeed be held in Canberra, Australia's national capital. I cannot imagine the authorities giving approval for such a trial in the likes of Washington, London and Paris. In my view, despite what Project Wing claim, this company has absolutely no respect for Canberra or Australia and is only interested in serving their own needs. CASA and the ACT government are not far behind.

Project management 101 and government policy development all promote the need for, and importance of, sound governance and oversight, regulation and community impact statements, communication and consultation with affected communities, risk assessments, and cost benefit analysis, and so on. What is astounding is that neither CASA nor the ACT government seem to have required Wing to meet the basics of these requirements.

The outcomes of the trial have not been made public and Wing has routinely refused to answer reasonable questions from myself and others impacted by the trial. All the activities to date suggest that the Wing is paying nothing but lip service to Bonython residents as they have moved into the neighbourhood and treated us like lab rats. Bonython has some 3500 residents – how can the needs and views of 130 testers/households be allowed to govern decisions about the success of the trial with little recognition of the views of other residents. This especially because Wing was given the responsibility for collecting and reporting on residents' views and complaints. This information has not been published, nor has it been verified by independent evaluation. Wing is not a credible witness because of what they stand to gain from the success of this trial.

A decision has already been made about expanding this service to other areas of Canberra, evidenced by Wing's establishment of a permanent base in Gunghalin and government stated support for the initiative. This before the Canberra community knows the outcomes of the trial and whether it was a success, and what this success looks like that is, a success for Wing because they achieved their objectives; or a success for the Canberra community that is, because it provides something that ACT residents want (most polls show a substantial majority against the service). The 'care less' attitude of the government and CASA is arrogant and dismissive of residents' concerns. Clearly money talks and residents will never have the same power as Wing in this regard, and yet we are the ones that will have to live with the results.

- 2) The economic benefit of drone delivery technology being tested in the ACT including;
 - a. The investment that has been brought in to the Territory at this stage,

I have no evidence other than Wing's claims. But as it was a trial operating from a temporary site with around 130 testers, and most of the businesses utilising the service already operate in Canberra through the usual retail outlets, I cannot believe that the investment for the Territory is that significant. For Wing, yes – they stand a lot to gain from the trial's success. I am yet to see what significant gain / benefit I will receive from a drone service delivering coffee.

While Wing claim that their service will decrease cars (petrol emissions etc) on the road, few people order coffee for delivery. The pay load for these drones is low, requiring multiple drones to deliver an order. How is this an efficient and effective use of resources?

- b. The number of jobs that have been created as part of the trial

I have seen no evidence of this other than Wing's claims and as Wing is funding the trial and has much to gain from its success, I take any claims they make with a grain of salt. Let's face it, they will make a lot of money from a successful outcome from this trial through the on-selling of their technology

world-wide. Most of the businesses providing products through Wing already operate in Canberra, so while they may recruit additional staff to be a drone workforce, there is still the same demand for the products being sold (coffee, food, chemist items), whether bought for the novelty of delivery by drone or going to the shops.

I will not buy from any business utilising the drone delivery service while it is being imposed upon Canberrans where we get no say over whether this is something we want or see as part of our national city's future environment. I know of other Bonython residents who have made a similar decision.

c. The extent of collaboration with local industry and academic institutions

I have seen no evidence of collaboration or consultation from Wing though I note they make claims to be neighbourly, to want to be part of the community. My experience is that that only extends to those that go along with their plans.

3) The extent of regulatory oversight of drone technology at various levels of government including;

a. Local authorities such as EPA, Worksafe, Access Canberra

I cannot comment.

b. Commonwealth agencies such as Air Services Australia, Civil Aviation Safety Authority

I am unimpressed with CASA's part in this trial – all care/no responsibility other than regulation of air space. No requirement to consult with affected residents, allowing for Wing to self-report, requiring others to provide video evidence of proof of issues eg flying directly over the dog training club; doing 90 degree turns in their delivery flight - Luke Barrington from Wing told me this practice was not allowed – I sent him details of my video showing that indeed this was the case. While he didn't bother to respond, that practice stopped. Seems to be a theme with Wing – we'll do what we want until we get caught.

The fact that CASA batted residents away on noise issues because it was not their responsibility!! Turns out it falls between the cracks of government agencies – no one is responsible (Air Services Australia's remit does not cover unmanned aircraft). A commendable effort CASA – not! Maybe the regulation impact statement would have identified this factor and allowed you to require it to be addressed before the trial started.

4) The extent of any environmental impact as a result of trialling drone delivery technology on;

a. Residents within the trial area

I found the noise of the drone to be high pitched, intense and irritating. It is unpleasant and always puts my nerves on edge.

I have a neighbour over the back, and three houses along. They have routinely ordered every day, sometimes twice a day during the trial. I can hear the drones coming from well inside my house even with the TV on, and I have enough time to walk outside to see them arrive, do their delivery, and depart. My neighbour's orders generally require 3-4 drones to complete the delivery which occurs over a 15-30 minute period. These drones fly over my house and that of my neighbours (most of whom are at home during the day).

I also hear/see drones making deliveries to other parts of Bonython because I live in a natural pathway from the drone airport to the broader suburb. In the early period of the trial, I had around 50 drones fly in and around my house within a six hour period.

According to Wing reports, they had around 130 testers in Bonython. If this number doubles, my experience can only get worse on a daily basis, all so people can get coffee, burritos and band-aids, products readily available at the local shops five minutes away. Based on my experience tensions and break-down of relationships between neighbours will become a regular occurrence if drone deliveries were to continue.

Wing claim that the drone noise is akin to a vacuum cleaner but that is not my experience. I have only ever heard one neighbour vacuum – generally on a Saturday – and that is because our family room doors are opposite each other about 7-8m apart.

Further, a vacuum cleaner is contained within the property, whereas these drones are flying above my house, which I find intrusive to, and invasive of, my peace and quiet, my mental and emotional well-being and contentment within my own home.

I did not ask for this trial, nor do I anticipate using drones to deliver products, given my proximity to the Hyperdome. I am actively boycotting any company associated with Wing and this trial, and will continue to do so.

b. Native wildlife

I witnessed birds regularly attacking the drones delivering to my neighbour, delivery after delivery. The birds are treating these machines as a threat to their environment and I don't blame them. They are invasive to the neighbourhood and the environment. It is only a matter of time until a bird is hurt, possibly also bringing down the drone and consequent damages to property and human beings/domestic animals.

c. Domestic animals

While the drones did not affect my dogs, I think the noise could affect some dogs which may result in increased stress, anxiety and barking which, is often a bone of contention between neighbours. I know - there are barking dogs next door and over the back and a couple of neighbours have complained about those dogs including contacting the RSPCA and Domestic Services. Constant and unnecessary noise around your own property impacts your quality of life and your enjoyment of your own home.

5) Ways to improve the use of drone delivery technology within the ACT

Drone technology has its place, but commercial drones should not be used in residential areas, and not as a routine delivery service. Emergency services would likely benefit from the use of drones eg during bushfire season.

6) Any other relevant matter

People (including Wing) have criticised Bonython residents against the drones as being against 'progress' – an easy cliché to denigrate the very valid views and concerns of people who were exposed to a trial without benefit or gain to the local community. Delivery of a cup of coffee or sunscreen is not a significant gain to an individual or community's quality of life.

Any new technology or initiative should be carefully considered for its place in the community and our broader society. Not all new developments bring the original benefits claimed, and the cons generally only emerge once the practice is entrenched.

I'm sure plastic manufacturers touted the many benefits (investment, employment, convenience, cost etc) of plastic containers, bags and products when they were first developed and sold. Plastic is now a blight on our environment, with government introducing strategies to counter a very destructive long-term problem.

In sum, this has been an eye-opener to the way the ACT government and the opposition operates. I am disillusioned and doubtful of their ability and capacity to provide effective governance for our Territory. The seemingly naïve delight in getting a cappuccino delivered by a drone without considering or challenging governance arrangements, the poor process and decision making has put us in this situation. Credit to Andrew Wall for at least pushing for this inquiry. No kudos to any of the others.

I do not want a sky-scape of drones flying such mundane items as coffee and band-aids around our beautiful city, unless this is something that the majority of Canberrans want - and this has not yet been tested.

This trial unfolded by stealth. Project Wing is secretive and driven to achieve its own agenda. The lack of information, communication, consultation and process (including by government), and the fact that 'Wing' has been trusted to self-report without any independent auditing or evaluation is unacceptable. Many Canberrans will be unaware of the impact of this proposed service on our city. It should not be allowed to continue until many of these issues are addressed, and the opportunity is given to decide whether this is something we want.

Thank you for the opportunity to provide input to this inquiry.



21 February 2019

TIPS:

- Typed electronic submissions are preferable, although legible hand-written submissions are acceptable. Submissions should not be stapled or otherwise bound.
- Submissions should be sent to:

VIA POST:

The Committee Secretary
STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
GPO Box 1020, CANBERRA CITY ACT 2601

HAND DELIVERED:

Committee Support Office
Office of the Legislative Assembly Legislative Assembly for the ACT
196 London Circuit, Canberra ACT 2601

VIA E-MAIL:

Standing Committee on Economic Development and Tourism
Email : LACommitteeEDT@parliament.act.gov.au

- Address the Terms of Reference. You do not need to write about every term of reference but you will need to address at least one. Reference those that are relevant to you.
- Your submission may include facts, opinions or arguments.
- Your submission does not have to be long. Focus on the most important issues that matter to you.
- It can be in the form of a letter, a short document or a substantial paper.
- Be clear and concise about happenings.
- Stick with facts, ie don't use phrases like " the drones go over my house 500 times a day".
- Use headings.
- Use separate paragraphs for each issue.
- Use dot points.
- Use page numbers
- Be respectful and polite.

For more information refer to - **A GUIDE FOR MAKING A SUBMISSION OR APPEARING BEFORE A COMMITTEE OF THE LEGISLATIVE ASSEMBLY FOR THE ACT.**

https://www.parliament.act.gov.au/_data/assets/pdf_file/0020/1063037/Witness-guide-2018-04.pdf

REMEMBER: Make sure you are aware of the closing date of the submission, being 22 February 2019.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 095

Date Authorised for Publication: 27 February 2019

VIA E-MAIL:

Standing Committee on Economic Development and Tourism

Email : LACommitteeEDT@parliament.act.gov.au

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

SUBMISSION: INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT

Personal Details:

Name:	
Postal Address:	
Phone:	
Email: (if applicable)	

Please note, I would like my submission to remain anonymous.

I would like to make a submission to the above Inquiry.

I am aware of the drone delivery trial that has been taking place in the ACT suburb of Bonython, by the American Google company Project Wing since July 2018.

I know people who live in Bonython who have been directly impacted. I have seen and heard videos of the drones as they fly over people's backyards and deliver goods. I am aware that their lives, the sanctity of their homes and amenity have been severely intruded upon for 6 months and that they are extremely upset about this.

This also is an invasion of people's privacy and basic human rights, especially as the people of Bonython were not asked for their permission or how they felt. There was no consultation.

I feel the ACT Government is acting with lack of integrity towards its constituents.

I am not opposed to the use of drones however this exercise has been a shambles for residents within and around Bonython.

Future drone usage should not be allowed without thorough consultation with residents of potentially affected areas.

Thank you for this opportunity to contribute to a significant social issue.

21 February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 096

Date Authorised for Publication: 27 February 2019

ACT Legislative Assembly

Standing Committee on Economic Development and Tourism

Submission to the Inquiry into Drone Delivery Systems in the ACT

I wish to make comments on the following matters to be considered under the terms of reference for the standing committee

(b) the economic impact of drone delivery technology being tested in the ACT including the:

(ii) number of jobs that have been created as part of the trial

When considering the jobs that may be created, it is important that the committee consider the number of jobs that will be lost e.g. delivery drivers and couriers. These are entry level jobs requiring no qualification except a driver's licence. These jobs are fast disappearing from our community and every effort should be made to preserve them to ensure people of all abilities are able to have the dignity of paid employment.

(d) the extent of any environmental impact as a result of trialling drone delivery technology on:

(ii) native wildlife;

I am particularly concerned about the impact of the drones both visually and aurally on the wildlife with which Canberra is particularly blessed. Our garden is fortunate to be visited by the following birds– wattlebirds, magpie larks, magpies, crimson rosellas, eastern rosellas, gang gangs, sulphur crested cockatoos, bower birds, butcher birds, noisy miners, blackbirds. In the wider neighbourhood galahs, red-rumped parrots, masked lapwings are resident. It would be an absolute tragedy if this abundant birdlife is frightened away by drone activity. I request that Parks ACT, the Conservation Council and other qualified bodies be participate in the environmental studies.

(iii) domestic animals;

As a dog owner, I am also very concerned about the distress that drones will cause to dogs. Our dog is distressed by hot air balloons, which fortunately are only present for a short and manageable time during the air.

Not only am I concerned about our dog, but also neighbours dogs. Will be subject to constant hysterical barking.

It is vital the RSPCA be consulted on effects on domestic animals.

(f) any other relevant matter

Social Impact

Drone deliveries will encourage social isolation, foster lack of exercise and this will impact of mental and physical health. Humans are social animals and need interaction with other humans to lead a fulfilled life. Governments at various levels are attempting to promote people to get active and involved in their communities and drone deliveries will encourage people to stay holed up in their homes. I was particularly appalled that coffee deliveries are being promoted as a great idea. People need to get out and even walk to their local café for a coffee

Health

The effect of noise on people with medical conditions sensitive to noise e.g. migraines need to be considered seriously on the basis of medical expertise.

Curfews

Deliveries would need to be subject to a curfew including no deliveries on Sundays.

Your sincerely

Jillian Farrer

[REDACTED]

[REDACTED]



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 097

Date Authorised for Publication: 27 February 2019

Standing Committee on Economic Development and Tourism

Submission: Inquiry into Drone Delivery Systems in the ACT

Name: [REDACTED]

Address: [REDACTED]

Phone: [REDACTED]

Email: [REDACTED]

To the Standing Committee on Economic Development and Tourism

I thank you for the opportunity to make comment on the following:

The extent of any environmental impact as a result of trialling drone delivery technology on residents within the area, native wildlife and domestic animals

I think that the drones are an unnecessary burden to communities. They encourage people to be lazy, instead of going out and sourcing food, drinks and supplies for themselves they are relying on drones to deliver them. If this continues our society will be led by people who rely on technology (which can be unreliable at times) to provide essentials for their life. The drones are noisy and invasive. During the trial, I disliked the drones because they prevented me from living my life at home in peace and quiet. They irritated me all day from the minute they woke me up with their high-pitched humming sound. I would make a special effort to make sure I stayed at my grandmothers on weekends just so I could sleep in on a Sunday morning without having my sleep disturbed by something that is completely unnecessary. The drones also happened to spook our wildlife and animals around the suburb. I enjoy taking pictures of birds and animals around Bonython but I wasn't able to during the trial because there weren't any around. I am only 15 and many would assume that I would be open to technology like this given my young age. The truth is, I really don't like these drones and I DON'T want them in my future!



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 098

Date Authorised for Publication: 27 February 2019

Re: ACT Drone Delivery Systems Enquiry

Drone technology has proved to be an effective tool for Emergency Services and authorised aerial surveys, however I strongly believe that Drone Delivery trials in the ACT should cease immediately and the ACT government should ban drones from being used for delivery services. I also believe that recreational drone use should be banned within say, 3km (or whatever distance is required so that they cannot be heard) of homes in the ACT.

My views are based on: the many letters published by the Canberra Times from Bonython residents negatively affected by the drone trial in their suburb; the 60-Minutes television segment interviewing Bonython residents and capturing film and sound footage of a nearby drone delivery; and my own experience of recreational drones. I have experienced recreational drone use at my local oval and was disgusted by the lack of consideration for other users of the oval and nearby residents subjected to the horrendous noise. Another experience was outside the ACT at a beach near Forster where people parked their car in the nearby car park and proceeded to fly a drone over the beach area – they were not from Emergency Services and showed no consideration for those enjoying a quiet visit to the beach nor the privacy of those on the beach. The noise was horrendous and very intrusive.

With regard to the terms of reference for the Enquiry:

- (1) (a) I cannot comprehend why the ACT government would permit a drone delivery trial in the ACT in the first place and following feedback from Bonython residents I cannot comprehend why the government would permit a further trial in Mitchell for drone delivery to Gungahlin suburbs. All Canberra residents live within a short distance from either a local shopping centre, group centre or town centre. The needs of those that require coffee at home can easily be satisfied by the purchase of a coffee machine thus neighbours do not have to suffer drone noise and no delivery cup is required. Similarly for loaves of bread etc. a resident can walk/cycle/drive to their nearest shopping centre. The often quoted emergency need for medication delivery in the suburbs is a furphy. Most GPs are located close to pharmacies and prescriptions can be filled at the time of consultation. Non-prescription medicines are not usually time critical. Again we have several extended hours pharmacies across Canberra – again walk/cycle/drive or use a taxi or Uber for genuinely urgent needs.
- (b) I believe the number of new job opportunities created by drone delivery service would be negligible. In any event new job opportunities could never offset the negative impact on residential amenity.
- (c) It is apparent there has been little forethought as to agencies responsible for drones in the ACT. Safety appears to be a critical issue – there have been reports of

'dead' drones littered around Canberra and a recent report of a drone being shot down. Banning drone delivery would be near perfect solution. However I believe every drone flown in the ACT should be registered and the own required to be insured for personal injury or other damage caused by a drone.

(d) The residents have spoken loud and clear – drone delivery services in residential areas cause loss of quiet enjoyment of one's home.

It has been observed that birdlife has left areas where drones are used – this is the bush capital and residents value the diversity of birdlife in our suburbs.

Dogs are distressed by high-pitched noises. It has been reported that noise from barking dogs increased significantly during the Bonython trial. We have more than enough noise from barking dogs in the suburbs and do not want it to increase. We experience increased dog barking during the balloon festival which is only a few days a year – that is enough!

(e) Even if drones were silent there would still be safety concerns – again the best solution is to ban them in the suburbs.

(f) Many have raised the issue of loss of privacy if drones are permitted to fly over homes. If only Emergency Services and authorised survey drones are permitted to fly over the suburbs the loss of privacy would not be unreasonable as it is offset by a greater good to the community.

I urge the Committee to conclude that drone delivery systems do not provide sufficient benefit to the community to offset the negative impact on the quiet enjoyment of our homes, the negative impact on wildlife and the safety of ACT residents.

Christine Gingell





LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 099

Date Authorised for Publication: 27 February 2019

From: [felicity dalzell](#)
To: [LA Committee - EDT](#)
Subject: Drone enquiry
Date: Tuesday, 19 February 2019 12:02:34 AM

Hi

I fully support the use of drone delivery. We participated in the trial and found it to be quicker than other real delivery methods. More convenient for what we wanted. This will help for someone stuck at home that just needs bread or milk, or think of the person who needs medication who can now get it delivered, like brother who can not drive due to epilepsy he can potentially get his Meds delivered safely quickly and conveniently. The kids loved it. We love that we can be part developing the future for our children. Like anything new a group of people will always be negative without see the advantage and positivity that drones can have in the community. The noise is no louder than a motor bike going past and lasts a very short period, lawn mowers are much louder than the sound of the drone. Claims that wild life/ birds have gone is not true we still have rosellas, ducks, magpies, galahs water fowl and crows around our house and they are still around stranger pond where we live, the kangaroos still eat grass on the front lawn and across the road, the local wombat is still here. The environmental impact is positive and I would like to see drone delivery expand as the more drones used the less cars used to deliver, much better for the environment. The environmental impact is something that is important to us and a big plus. We had friends and family come over to trial using drone delivery they all liked it and want it in their suburb so they can use it. I think it's good the local government support the trial to help shape the future in drone delivery for Australia and the world.

Thanks for listening

Felicity Dalzell.

[REDACTED]

Sent from my iPad



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 100

Date Authorised for Publication: 27 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Submission into the Parliamentary inquiry into the drones in Bonython
Date: Thursday, 21 February 2019 8:55:52 PM

VIA POST:

The Committee Secretary
STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
GPO Box 1020, CANBERRA CITY ACT 2601

VIA E-MAIL:

Standing Committee on Economic Development and Tourism
Email : LACommitteeEDT@parliament.act.gov.au

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name: [REDACTED]

Postal Address: [REDACTED]

Phone: [REDACTED]

Email: (if applicable) [REDACTED]

Please note, I would like my submission to remain anonymous.

I am writing to the Inquiry into the drone delivery system in the ACT, as a resident of Bonython where the Project Wing drone trial took place for the last 7-8 months. When I first purchased my block of land in the new part of Bonython 12 years ago, I did so based on its quiet location fronting the bushland with serene outlook facing the Brindabellas.

In July 2018, the drones started and it was the beginning of my ruined weekends. I work damn hard during the week and use my weekends to sleep in, rest and recover from the week that was. Because I was fronting the bush, and one of the closest houses to where Project Wing were set up, I was in the direct flight path of every single drone on the weekends. We had close to 40 or 50 drones a day flying over our house..Now these aren't your recreational drones, they have 14 rotors, fly at up to 125 km per hour and sound like an F1 car when they fly over the roof tops. I could hear these drones over the TV inside of my house (even when I was watching the V8 Supercars).

They said they wouldn't start before 8am but i was being woken up by the drones as early as 7:20. My dogs also got scared and annoyed at these drones they were that noisy.

Where I live, we used to have lots of bird life, since the drones started, a lot of the wild life had disappeared, the pond used be teaming with waterbirds such as ducks, swans and pelicans even. Since the drones came, they all left. I used to wake up to the sounds of the

bush, now i was waking up to the sound of drones for people getting coffee and burritos delivered by drones.

Don't get me wrong, I'm not against drones, I think they totally have their place with emergency services and the technology is amazing. As a surfer, I support a group of guys in Sydney who run the drone shark app and patrol the beaches and alert life guards when they spot sharks in the water. These guys are doing a fantastic job and would greatly benefit from some government funding....

Using drones to deliver burritos and coffee and even pharmacy drugs from the chemist scares me due to the fact that the drones are not without their faults...hot drinks have been spilt over people's driveways that didn't even order them, drones have had "unscheduled " landings, incidents with cars and birds. What if drugs were delivered in the wrong place and kids playing in their backyards see them as lollies or my dogs eat them....

I paid a premium for the place I live in for it peaceful outlook. These drones totally wrecked that and just left me feeling angry that this was happening and I didn't even ask for it. I spoke to Project Wing many times to tell them my concerns..Who I'm sure were just looking at the dollars that were going to come in...I spoke to Mick Gentleman who didn't seem too concerned. Mark Parton didn't think there was a problem but at least he did a door knock to understand people's concerns.. Gai Brodtmann was the only one who listened and took what we were saying seriously.

These drones are now about to go to the North side of Canberra and service 5 Suburbs..I only hope that Project Wing and the Government get 5 times the backlash that we created here in Bonython...

Drones are awesome technology, but they're not wanted to litter our skies for deliveries to those that are too lazy to get off the couch and go and frequent the shops..

Thank you.



21 February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 101

Date Authorised for Publication: 27 February 2019

Standing Committee on Economic Development and Tourism

Submission: Inquiry into Drone Delivery Systems in the ACT

Name: [REDACTED]

Address: [REDACTED]

Ph: [REDACTED]

Email: [REDACTED]

To the Standing Committee on Economic Development and Tourism

I am eleven years old. I don't like Project Wing drones because they sound like really loud screaming ghosts when they fly over you. They look like scary mechanical eagles. They disturb me when I play outside. It makes me annoyed. I wish they were silent. Why don't Google invent silent drones? The Government should only let them fly if they are silent, and if they promise to not have cameras on them. They should fly as high as possible so they don't do anything bad to people.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 102

Date Authorised for Publication: 27 February 2019

From: [Peter Longland](#)
To: [LA Committee - EDT](#)
Subject: Inquiry into drone delivery systems in the ACT
Date: Thursday, 21 February 2019 9:19:01 PM

LACommitteeEDT@parliament.act.gov.au

Please accept my submission below:

Peter John Longland



I'm deeply concerned about the prospects of drones being used over suburban environments for anything other than emergency uses. The first trial has drawn extensive protests from those living in the trial area due to the massive intrusion into their daily lives, many many times during the day. These are some of my concerns:

Noise:

- The drone noise is high pitched and clearly in a range to cause discomfort and annoyance
- The drones in the trial were coming 10,20 times a day – my neighbour mowed his lawn three weeks ago and will likely not do again for another two to three weeks, so frequency of intrusion is a critical factor not just the dB reading as the Chief Minister has alluded to.
- Schools will certainly be greatly affected by this scheme as there is little prospect of providing such a drone service that excludes school areas hence the education of our children will be adversely affected

Sleep:

- Beyond the impact of noise affecting our waking life many of us seek and require sleep during the daylight hours due to shift work, illness recovery from chemo or old age. It simply cannot be validly claimed that, say, restricting this to 9:00 to 5:00 or whatever might be proposed will be a solution to the acknowledged high noise and intrusion.

Effect on animals:

- Birdlife and our enjoyment of birdsong will be greatly affected
- Dogs, cats and other household pets are known to be disturbed by such noises and I believe that this has been reported during the trial

Privacy:

- Drones are flying over private residences and use vision. This data is prone to cyber attack and abuse by bad actors. We have not given permission for this intrusion to our privacy

Jobs:

- The sort of deliveries that I understand have been trialled are currently serviced by land based delivery systems bike, motorcycle, Uber and taxi that provide a more widespread economic benefit to the community.
-



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LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 103

Date Authorised for Publication: 27 February 2019

Standing Committee on Economic Development and Tourism

Submission: Inquiry into drone delivery systems in the ACT

Name: Vjekoslav Rezo

Address: [REDACTED]

Phone: [REDACTED]

Email: [REDACTED]

To the Standing Committee on Economic Development and Tourism

Canberra is a unique city. It nestles comfortably in the Australian landscape, often referred to as the “Bush Capital”. Being one of the least densely populated capital cities in the world, it was designed to integrate the native flora and fauna within its streets and swathes of open space so that its inhabitants can enjoy and appreciate nature. Many people move to Canberra to experience the unpolluted atmosphere we have. I consider commercial delivery drones to be visual and noise pollution.

Drone technology can have an important role in our future society but only in essential services where its use is structured and unobtrusive. The idea of thousands of drones flying through the skies of our Bush Capital is repulsive. I have lived the proposed future in Bonython and despise it.

The Minister for Planning and Land Management should be examined for his involvement in these delivery drone trials. Initially inviting Google to our region, and then seemingly abandoning his responsibilities to his constituents. He stonewalled any questions posed to him by concerned residents of Bonython despite his implicit involvement and ignored recommendations of commercial drone usage written by his own staff.

He generously provided a site at Greenway for these drone trials despite its development conditions prohibiting its use. The ACT Government allowed these trials to be conducted under a self assessment. Something that affects the Canberra way of life should be conducted under a community assessment procedure and the Government should not yield to private commercial companies.

I doubt if the same conveniences would be afforded an alternate drone delivery company if it was not Project Wing (Google).



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 104

Date Authorised for Publication: 27 February 2019

ACT LEGISLATIVE ASSEMBLY INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT

SUBMISSION

Dear Sir / Madam,

This is my submission to the Australian Capital Territory Legislative Assembly Inquiry into drone delivery systems in the ACT.

The proposal use of drones for delivery services in the ACT raises a range of legal/privacy, safety and noise concerns. I will briefly discuss each of these concerns.

1. LEGAL / PRIVACY CONCERNS

The first concern about the proposed use of drones is the legal issues that it raises. The main issue here is privacy.

The business entity conducting the test calls itself 'Wing Australia' (https://wing.com/intl/en_au/). However, as stated on the entity's website, it is in fact an arm of Google Australia Pty Ltd. The website also states 'Wing Australia' is also associated with a United States corporation, Wing Aviation LLC.

The drone is equipped with a camera and flies up to 120 metres (400 feet) off the ground. While Wing Australia has claimed that the camera is 'low resolution', this is difficult to believe, as Wing Australia has also stated that it intends the drone to become autonomous in future. In any case, it appears unlikely that this could be regularly monitored by Australian authorities.

At 120 metres in the air, it would easily be possible to film persons in their private homes or other private activities without their knowledge. A drone operator might also attach another camera of their own to the drone, enabling them to take unauthorised footage.

It is also unclear whether the drones will be recording sound, but if so that would only increase the threat to privacy. The drones would potentially be able to record people's private conversations without their knowledge.

Drones would likely constitute listening or surveillance devices under Australian legislation if they were used by Australian law enforcement authorities. When used by law enforcement agencies, such devices at least require the authority of a senior officer to use. Often they require a warrant. However, it seems that Wing / Google has been able to use these privacy-invasive devices without any such checks or balances.

The next question is who has access to the footage. Wing Australia has claimed that only its engineers could access the footage, but even if that was the case, it would still allow those persons to view footage of individuals going about their private activities. In reality, it is more likely that anyone working in Wing or Google could access the footage if they wanted to do so. Another possibility is that the information could be hacked and put online for everyone in the world to see.

Another issue is whether the information will be moved out of Australia. This seems a likely possibility, given the project is being run by Google. In that instance, Australian authorities would have no control of what happens to people's private information.

Privacy Act 1988 and the Australian Privacy Principles

In terms of privacy law, it is arguable that collection of personal information (such as camera footage of persons) by Wing / Google would not be authorised under the *Privacy Act 1988* (Cth) and the Australian Privacy Principles (APPs) under that Act. APP 3.2 provides as follows:

If an APP entity is an organisation, the entity must not collect personal information (other than sensitive information) unless the information is reasonably necessary for one or more of the entity's functions or activities.

It appears that the drones will collect a large amount of personal information when doing deliveries. It is doubtful whether it would be reasonably necessary to retain (collect) this information.

In addition, APP 6.1 provides that an entity must not use or disclose personal information other than for the primary purpose of collection (unless an exception applies). There will potentially be a large amount of footage of individuals that is collected. It is difficult to see how this could be used legitimately. It should be remembered that the collector of the information will be Google. It is not hard to see Google trying to use the collected information for other (secondary) purposes. They might try to rely on dubious 'consent' clauses buried deep in the terms of service, but even if such terms were legitimate (which is arguable), they would only apply to direct users of the service. Such terms and conditions could not apply to persons filmed by the drones who were not users of the service.

Human rights

The ACT government frequently asserts that it is a leader in 'human rights' legislation in Australia.

Section 12(a) of the *Human Rights Act 2004* (ACT) provides as follows:

Everyone has the right— (a) not to have his or her privacy, family, home or correspondence interfered with unlawfully or arbitrarily.

This reflects Article 17(a) of the International Covenant on Civil and Political Rights (ICCPR), which provides as follows:

1. No one shall be subjected to arbitrary or unlawful interference with his privacy, family, home or correspondence, nor to unlawful attacks on his honour and reputation.

For the reasons discussed above, allowing drones to be used for trivial purposes such as delivery of coffee or burritos is arguably a breach of the right to privacy.

Torts and legal liability

Use of the drones potentially raises the issue of tort liability under Australian law. This is a complex issue that I will not explore in detail. However, it is arguable that use of drones could result in liability in a range of torts, such as:

- Nuisance (private) – as the drone could cause an interference with another person's use or enjoyment of their land.
- Nuisance (public) – as the drone usage may materially affect the reasonable comfort and convenience of a whole class of persons.
- Negligence – if a drone were to malfunction and injure a person (e.g. by falling on them or even spilling hot drink on them).
- Assault – if a drone were to be used deliberately to injure a person.

Exactly who would be liable would not always be clear. However, for at least some of the potential torts, the range of potential tortfeasors could be wide and could include:

- The business providing the drone delivery service
- Any business that partnered with the drone delivery service to deliver the business's products
- Any person who used the services of a drone delivery service.

This could potentially result in a class action being made against one or more of the above legal persons.

2. SAFETY

There are a range of potential safety concerns with the use of drones. These include potentially for either unintentional or intentional harm to persons.

Drones are a new technology and can still be considered unproven. It appears that Wing / Google would like to see hundreds of these machines flying through the air in Canberra. They are large and heavy machines that could injure someone severely if they fell onto a person. In addition, there is potential for items being delivered falling or spilling onto persons and injuring them (e.g. hot coffee, heavy packages).

More broadly, it is intended that the drones will become autonomous, so they will not even be controlled by a person. It is unclear exactly how reliable such technology will be, but there have been a number of reports about self-driving cars malfunctioning and causing injury or death.

Drones also pose a safety threat to traditional aviation. In early January 2019, just a few minor drone sightings was enough to have to close Gatwick Airport in London. It takes only one drone used irresponsibly to cause a major disturbance. There is also of course the potential for drones to be used to pose a threat to the safety of passenger aircraft (whether intentionally or unintentionally). Canberra Airport is not far from where it is proposed that Wing will have its base of operations. Having hundreds of drones flying through the air, perhaps not even controlled by human operators, would potentially create a dangerous environment for passenger aircraft during their most vulnerable period of time in the air (takeoff and landing).

3. NOISE AND AESTHETIC CONSIDERATIONS

There are a range of noise and aesthetic concerns with drones. Delivery drones emit an appalling, loud, high-pitched noise. It is astonishing that such an invasion of the peace and quiet of a neighbourhood is being permitted simply so that someone can get a burrito. Being neighbours with a person who regularly gets such deliveries would no doubt be a very unpleasant experience.

Drones are also ugly to look at. They are an eyesore. It is intended that there will be hundreds of these machines in the skies, which will significantly detract from the natural beauty of Canberra's environment. Instead of looking up to see blue sky, there will instead be a swarm of mechanical wasps. This would be environmental vandalism.

Drones also pose a threat to wildlife, particularly birds. Canberra has a wide range of beautiful bird species and it would be a shame if they were scared away by the noise and disruption that hundreds of drones would cause.

4. ALTERNATIVES TO DRONE USE

Given the significant privacy, safety and environmental concerns raised by drones, it is appropriate to consider whether they are necessary.

Drone use for trivial purposes such as food, drink and package delivery does not appear to be justified. Drone delivery of items such as headache tablets is equally trivial. People could just as easily buy these items themselves or have them delivered by car or bike. Car and bike delivery would take the same amount of time and would not result in the significant detriment to the community that drones clearly cause. Bike delivery would be much better for the environment.

There are of course more serious potential uses for drones, such as:

- use in emergency situations
- law enforcement
- bushfire monitoring
- search and rescue
- farming
- traffic control
- scientific research

Not one of these more serious potential uses requires hundreds of noisy, privacy-invasive drones to be used on a regular basis throughout urban areas.

5. CONCLUSION

Using drones simply for delivering food, drink or other trivial items is unjustified. The huge costs in privacy, safety risk and environmental pollution strongly outweigh any such usage of drones. Therefore use of drones for delivery of food, drink or other trivial items should be prohibited in most circumstances. Drone use should be restricted only to more serious uses.

Andrew Newman-Martin

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	Bonython Against Drones Action Group Representing the residents of Bonython
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	stopbondrones@gmail.com

To the Standing Committee on Economic Development and Tourism

The Bonython Against Drones (BAD) Action Group is a non-political community action group, formed in September 2018 in response to the large outcry by Bonython residents against the trial by Project Wing Australia (Google company), which began in July 2018, using drones (Unmanned Aerial Vehicles) to deliver a range of food, such as coffee and burritos, and some pharmacy products to our suburb. Approximately eighty percent of Bonython residents, canvassed during the gathering of signatures for a petition to be presented to the ACT Legislative Assembly, expressed their strong objections and anger at the trial being conducted around their homes. Over one thousand people signed the petition.

Many of the issues raised in this trial were identified in feedback to the Federal Parliamentary Inquiry into the Regulatory requirements that impact on the safe use of Remotely Piloted Aircraft Systems, Unmanned Aerial Systems and associated Systems, December 2016. However, despite the enormous identified risks, the ACT Government and the Civil Aviation Safety Authority (CASA) allowed a trial of drones over our residential suburb in the ACT.

The Project Wing Bonython drone trial is so controversial it has been the subject of much media attention in recent times - local, national and international. It has been written about in the following newspapers: The Canberra Times, The Australian, The Sydney Morning Herald, The Daily Mail in the UK and The Wall Street Journal in the USA. It has been the subject of television programs on local and national ABC, Channel 7 National News and Channel 9 "A Current Affair". It has also been a regular topic of discussion on Canberra ABC talkback radio.

BAD Action Group successfully lobbied the ACT Government to agree to conduct an inquiry into drone delivery systems in the ACT.

The following comments represent the viewpoints of our members.

- We would be happy to do a presentation to the Standing Committee on Economic Development and Tourism, should you require one.
- We also respectfully request the opportunity to provide information to you after the 15th March 2019, if the FOI request currently with the ACT government provides vital information to the Inquiry. Please note we requested this information on 25th September 2018 and have now had 4 extensions. Attachment A is evidence of the last extension.

We thank you for the opportunity to provide comment.

Bonython Against Drones Action Group

<https://bonythonagainstdrones.com/>

<https://www.facebook.com/groups/318338528900536/>

The Action Group would like to comment on the following terms of reference:

1) The decision to base the trials of the technology in the ACT and surrounding region

The decision to base the trial in the ACT did not include consideration of the impact of such a trial on the residents, nor was the residents' approval sought. There was no real or comprehensive consult of the residents of Bonython, nor were any small businesses in the local Tuggeranong area consulted or afforded the same opportunity.

The terms of this particular trial were unclear to us. Wing claimed it "envision[s] a future where drone delivery is the safest, fastest and most environmentally friendly mode of small item transport, and everyone can benefit from having commonly-needed goods available to them". This statement has no relevance for unwilling participants in a delivery trial.

- It is not the safest – CASA had to change rules for Wing. Residents reported many safety concerns and incidents
- It is not necessarily the fastest - any package over a certain size required multiple deliveries over a period of time, instead of one delivery. A delivery of a meal could take up to half an hour.
- It is not environmentally friendly – residents reported a diminished quality of life, loss of wildlife and the biggest concern was noise pollution. The drones have been measured at over 80 decibels at a fence boundary during a neighbourhood delivery. Bonython is situated next to the bush and is usually very peaceful.
- Not everyone can benefit from commonly needed goods – larger companies usually home deliver multiple common goods. With changing technology to electric vehicles, efficiencies of scale are with the larger technologies.

BAD had a meeting with Labor MLA Mick Gentleman and he stated that he did not invite Wing, that he had in fact invited Google Campus. Google Campus exists without a drone delivery component. Newspaper reports and Hansard reveal that in fact a drone service was invited. We believe the decision to base the drone delivery trial in the ACT was initiated by the ACT Government and Google. We do not believe, however, that this is just about deliveries of fast food. Extracts from Hansard clearly show that this delivery trial is not just about delivering "coffee and burritos", but an experiment in managing airspace and developing drone technology. BAD are aware that all other States/Territories in Australia have not allowed this sort of drone delivery trial. We are not aware of any country in the world that permits such delivery drone operations in a suburban area because of safety concerns and risks to the general public.

Attachment C, Andrew Barr to Ryan Burgess (before the trial started on 13/12/17), stated "this next phase would be world leading. I strongly welcome your plans for Canberra". "Canberra is well placed for the roll-out of new and disruptive technology". This demonstrates that the focus of the Andrew Barr's interest, due diligence and that the government had no concerns or processes in place to consult the community. Further information obtained under a FOI shows blasé and total ignorance (and trivialising) of the serious issues of the safety, regulations and impacts on residents and the environment. Comments in emails such as "The BBQ went well. Mick Gentleman encouraged them to consider Tuggeranong and all were impressed by his MG Vintage car", reflect the lack of knowledge and understanding of the technology and significant safety issues in place which require strong regulation by authorities. The correspondence is equivalent to giving your five year old the keys to the car. The government's only concern for Royalla seemed to be around their household pets "I am not sure how my dog would react" and "lets have skywhale shaped drones".

These sorts of experiments should not be conducted on residents of the ACT. If, as we believe, the trial was about managing airspace and developing of drone technology, this should be done away from the general public in more controlled environments, with scientific methodology.

The majority of Bonython residents commented on the lack of consultation. We are aware Wing organised a BBQ at Pine Island and fewer residents saw a presentation at the Tuggeranong Community Council. Wing claim they consulted by letterbox drop, but this was in fact an advertising brochure. However, many residents did not get the Wing flyer in their letterbox drop. We estimate only 1/3 of the households received the flyer, which was information-giving, not consultation. The flyer stated "*Tuggeranong residents are invited to come by and get to know the Wing team, learn about the trial and order free prizes by drone*".

Those residents who did attend have told us had they seen the drone in operation (not the Wing publicity video with music playing to drown out the drone noise), they would have never agreed and signed up to the trial.

The decision to base the trial in the ACT, we believe, was misguided and irresponsible. It has no basis except for the ACT Government being persuaded by a large corporate firm, big money splashed around, and thinking they would get recognition for forward thinking. This is wrong. Any responsible government or regulatory body (CASA), having identified the many serious risks, should not have proceeded until ALL the risks were addressed.

BAD has already expressed its concerns about Wing's proposed future expansion of the drone service to Northern Canberra:

- Despite the many adverse effects and complaints experienced and reported from the Bonython trial
- Without any independent evaluation of the trial having been conducted
- Despite the fact that this Inquiry is in place

Obviously CASA must issue a new Instrument of Exemption to cover the changed conditions pertaining to the northern suburbs' operation.

It appears that Wing are making the rules, bending the truth and the ACT and Federal Governments are, in consequence failing listen to and protect the public, and are being complacent in terms of evaluating the serious effects.

2) The economic benefit of drone delivery technology being tested in the ACT including;

(i) The investment that has been brought in to the Territory.

BAD question if there is any economic benefit to the ACT as the drone delivery trial was done for free. They had many costs during the trial including a lease fee, publicity, setting up a temporary base, etc. The trial failed to provide competitive opportunity to other delivery providers. Until a fee is included in the costs, the real value of using the services cannot be assessed. How many of the few residents who took up the Wing offer would have done so if they had to pay a delivery fee on top of the price of their coffee?. Note that the 200 flights claimed by Wing in the trial include many, many, multiple deliveries to households to deliver a meal.

Wing's strategy paper (obtained under FOI) "Drones: delivering benefits to the ACT" contains no supporting evidence or data. It is based on assumptions, mainly on taking business from existing providers such as Deliveraroo and Uber Eats. It is also based incorrectly on the business applied to the entire population of Canberra, which is unrealistic given that the drones are not allowed to fly in many sensitive areas. How 2000 flights in Bonython over a six month period can become 11,000 flights per day is astonishing – impossible unless the drones deliver over the whole of the ACT. We question if this is possible as there are many restrictions which would not permit this. For example, current drone rules on flying over main roads, near the airport and the population (especially the more affluent suburbs) would not accept their peace and homes being diminished, as happened with Bonython residents. The report claimed growth in retail sales in the ACT by \$40 million by 2030. There is no evidence in this report to substantiate where and in which industries the sales will be generated from just deliver drones.

We believe that merely introducing a new method of delivery of limited goods (small and light only) will not add \$40m dollars to the ACT economy. According to media reports, only 160 Bonython households signed up for the trial. This take-up rate is less than 10% of the population of Bonython. Not all these people had deliveries and many dropped out. These low numbers, and the significant negative community reaction in Bonython to limited drone deliveries, is a testament to the low take up rate and non-acceptance of this technology. Since only 'lighter items – less than 1.5 kilos' can be delivered, the economic benefit of single deliveries against a van which delivers 1000 items at a time is highly questionable.

Compliance

BAD are concerned about the lack of regulations and compliance measures over drones, as Wing only have to self-report any incidents. Bonython residents have reported to us they have witnessed a number of incidents. Wing claim these are "controlled landings", and disputes other eye witness accounts, but we claim they are real incidents. The Federal Government announced in May 2018 additional money to CASA to help develop compliance. Until these compliance measures are in place, there should be no further trials:

<https://www.innovationaus.com/2018/05/Budget-2018-A-tech-round-up>

The drone industry and its regulations are still in their infancy. CASA only announced in January 2019 the requirement to register all drones. Until all the regulations are in place, all trials involving the public should cease. What is stopping private and anti-drones establishing themselves or counter-drone operators establishing services in the ACT?

Canberra Times 19 February 2018, "Age of the drone has dawned, but government is still in the dark on how to regulate it" by Claudio Bozzi (lecturer in law at Deakin University) states "Incidents of drones intruding on personal privacy, compromising security and raising safety concerns rightly receive considerable media attention. The proliferation of inexpensive drones carrying sophisticated imaging, detection and transmission equipment capable of collecting, storing and sending personal data raises practical, ethical and legal questions regarding privacy and the safety of the national airspace". He outlines in detail the issues with the different privacy laws and refers to the recent Senate Inquiry into drone operational safety which made 10 recommendations - the Federal Government has only agreed with two.

Lack of transparency and incorrect information

Wing advised they would not share their feedback publicly or to the ACT Government. They will only provide a “summary” at the end of the trial. What have they got to hide? BAD believe an audit should be conducted on the trial to ensure the veracity of the results.

BAD are also aware that many of the statements made by Wing are incorrect. We understand that one of our members has highlighted these incorrect statements in their submission to the Inquiry. If Wing are making incorrect statements in the media, how much of what they propose and say can be believed? Wing is a subsidiary of Google who were just reported as breaking antitrust law and hit with a \$2.7 billion fine for having a price-comparison feature built into the company's search engine. It is telling that most of the documents we have obtained under FOI have been signed by a Google representative. BAD are concerned that the cameras and data Wing send back to the US will not be safe, given the recent breaking of the law. For example in January 2019 Google was fined 50 Euros in France because its data consent policies were not easily assessable or transparent.

<https://www.theverge.com/2018/11/27/18114111/google-location-tracking-gdpr-challenge-european-deceptive>

(ii) The number of jobs that have been created as part of the trial.

BAD believe that the proposed expansion of the trial will result in job losses. We have consulted economic experts at the Australian National University who have confirmed that there will be no growth in jobs as the drone delivery service will simply shift the jobs from one sector to another. We believe that we are now faced with potential job losses for those employed in the courier and delivery area. These are generally low skilled, low paid and casual jobs. The drones would replace people employed in courier and delivery areas.

Evidence that delivery drivers would be replaced is stated in the Canberra Times 15/11/18. Steve Evans quoted James Burgess's description of how the service would work in Mitchell as “the drones would hover 7 metres off the ground and lower a line with a container. Sellers and buyers would hook and unhook the baskets containing the goods”. So, the end results – job losses.

(iii) The extent of collaboration with local industry and academic institutions

There has been no collaboration with local industry and academic institutions that has been reported. Wing did not use local Tuggeranong businesses, instead using companies that were not part of the local Tuggeranong business community. The entire extent of their marketing campaign focused on KickStart (for the coffees), Guzman y Gomez (for the burritos), and Chemist Warehouse – none operating in the Tuggeranong area. All to the detriment of local businesses.

As far as we are aware, there has been no collaboration or discussion with local couriers and delivery agencies.

3) The extent of regulatory oversight of drone technology at various levels of government including but not limited to:

(i) Local authorities such as the Environment Protection Authority (EPA), Worksafe and Access Canberra

EPA – There are no regulations under the EPA Acts that apply to drones, therefore the EPA has not accepted any responsibility for addressing concerns such as the excessive noise levels. The Environment Protection Act 1997, Section 8 specifically does not apply to “Aircraft” (see below).

- 8 Limitation of application in relation to certain people and things**
- (1) This Act does not apply in relation to noise made by or a pollutant emitted into the air by—
- (a) a light rail vehicle or other train; or
 - (b) a Commonwealth jurisdiction aircraft within the meaning of the *Air Services Act 1995* (Cwlth); or
 - (c) a person using only his or her body; or
 - (d) an animal; or
 - (e) a motor vehicle being driven on a road unless the motor

ACT Government tells us that they are not responsible for the noise. Airservices Australia told BAD, in regards to noise, they are only responsible for “manned aircraft”. As drones are classed as “unmanned aerial vehicles”, this means that NO GOVERNMENT AGENCY has responsibility for the noise of the drones. We have been told that the only avenue for complaints about the noise is to the company making the noise - Project Wing.

Attachment D shows the zoning regulations for the site. In particular, they failed to take into consideration the requirement to d. Protect the amenity of nearby residential areas, with regard to noise, traffic, parking and privacy.

We note that Airservices Australia’s submission makes reference to receiving six complaints from people impacted by the noise. Five were unhappy about the frequency of the drones over their area, three raised privacy concerns and one was about safety. BAD is aware of many more people who complained to Airservices Australia, and after being referred to other agencies first, were then advised by Airservices Australia that they were not responsible for “drone” noise.

Worksafe – have nothing to do with this trial or drones that we are aware of.

ACT Parks and Wildlife – we are aware that Parks and Wildlife (through various emails), granted a licence for the drone trial to operate over the relevant parks in the Bonython area including Pine Island area (a popular spot for Canberrans during summer). Part of the condition was that Wing was supposed to do an avian study. Apparently nobody will have access to this avian study but Wing, and we have concerns that at the start of the trial (a baseline was not established on the wildlife in the area), or what research has occurred since the trial has started.

The ACT Government is failing to follow up on any of the imposed requirements, make information available or take responsibility for its actions in allowing the trial to proceed.

Access Canberra – we are aware many complaints were referred through Access Canberra, however as these were outside the “normal business” for the government, they were referred incorrectly back to CASA. No one in local government had any idea of who, where and what to do with complaints. The Action Group has sent many emails and letters to the ACT Government, and has either received incorrect information, nonsense information or no response at all. The question to ask is – who is responsible for the noise? The answer – apparently no one. The noise is not regulated by any Federal or ACT agency.

(ii) Commonwealth agencies such as Airservices Australia and Civil Aviation Safety Authority

CASA is responsible for the safety and regulatory aspects of the drones. Despite the residents of Bonython reporting drone incidents, these were ignored by CASA, as Wing is required to ‘self

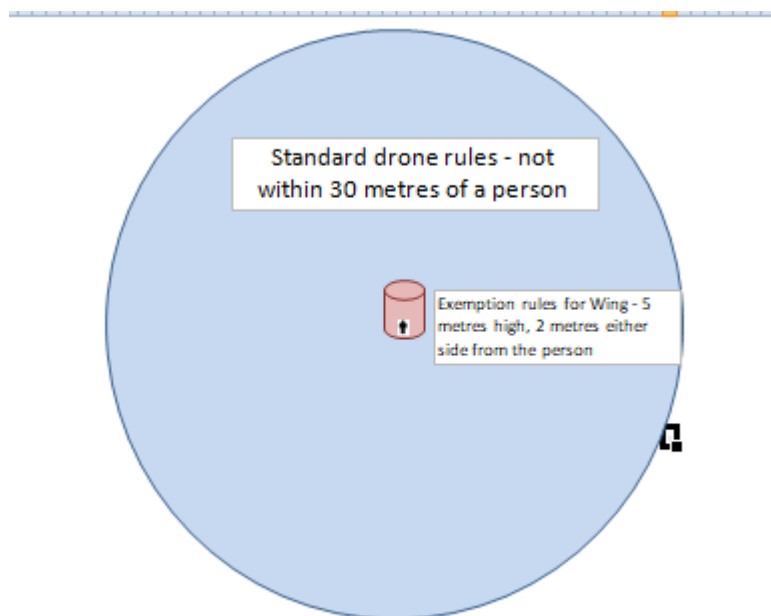
report'. CASA has not accepted that drones landing in other people's property, drones dropping their loads, drones flying low near cars or bird attacks are reportable incidents.

The FOI document from CASA revealed that CASA issued an Exemption to existing Regulations that apply to all other drone operators in Australia, i.e. that a drone cannot operate within 30 metres of a person. The Exemption issued to Project Wing by CASA to conduct deliveries to homes in Bonython allows its drones to operate within 5 metres overhead and 2 metres horizontal distance from a person. There is no operator control of the drone during deliveries - it is software controlled flight. How can the operator (Project Wing) ensure that the minimum distances mandated from persons on the ground are adhered to? NO OTHER GOVERNMENT IN THE WORLD allows this. No trials have been conducted to ensure the safety of people subjected to such operations. The residents of Bonython are guinea pigs

BAD wrote to Minister McCormack MP, raising our concerns over the drone trial. We note that his advice from CASA was INCORRECT, as he states Wing were allowed to operate within 30 metres of a person. The FOI documents clearly show it to be 5 metres overhead and 2 metres horizontal distance from a person. (see incorrect information below).

I have sought advice from the Civil Aviation Safety Authority (CASA) in relation to the matter you have raised about operational zones for the Wing drone delivery trial. CASA advised that the exemption instrument RPAS2017-1748 you received under the Freedom of Information request provides Wing with exemptions from CASA's standard operating conditions; that is, it allows Wing to operate within 30 metres of a person and in populous areas, such as urban or suburban zones.

To put this into context, the following diagram depicts the changes in distance. The blue area represents the standard drone rules, the red cylinder with the stick figure inside represents the Exemption issued to Project Wing. That is why residents feel unsafe, violated and angry.



We have been advised by a technical expert with over eight years' experience writing CASA regulations that the wording of the Exemption is unclear and leaves the trial open to having its veracity questioned. We have entered into correspondence with CASA about this and are unsatisfied with their response. We have sought legal assistance with this matter.

Project Wing and the ACT Government tell us this trial is a world-first. Therefore, with the world's aviation/drone industries scrutinising it, we believe it is important that the wording of the Exemption is accurate, and that its conditions guarantee public safety. We do not believe this to be the case.

CASA also tells us it is not responsible for noise regulation of the drones or for privacy issues. Likewise no other Government agency, State or Federal, is responsible for ensuring residents' privacy is protected from the drones.

There is a serious lack of regulatory oversight at all levels of government which allows the excessive and substantial noise (80 decibels - EPA regulates residential noise at 45 decibels during the day and 35 decibels at night) of these drones to be unregulated. There is also a lack of regulatory oversight at all levels of government which allows the serious issue of privacy to be unregulated.

Given the number of recent drone incidents worldwide (Gatwick Airport, Canberra NYE, Tasmanian bushfires, etc); we question why the rules were relaxed for the Project Wing trial. If Wing cannot operate within the current laws, then it brings into question other issues such as commercial agendas overriding normal governance arrangements and the motives/agenda of governments. Will CASA change the rules for other drone delivery agencies (such as Amazon)? On what basis was this business decision made? Does business override public safety and quality of life issues?

The Federal Government in 2016 called for submissions into the Regulatory requirements that impact on the safe use of Remotely Piloted Aircraft Systems, Unmanned Aerial Systems and associated systems:

https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Rural_and_Regional_Affairs_and_Transport/Drones

BAD recently received a copy of the Federal Submission under our FOI request to the ACT government. There are many concerns and issues raised in the submission. We question why the ACT Government initiated the Project Wing drone trial in Bonython given that it knew of the many serious and significant risks involved. To go ahead with further operations is, in our opinion, further gross negligence disguised as a business opportunity for a particular multinational company.

The Bonython Against Drones Action Group also wrote to the Federal Minister for Transport, Infrastructure and Regional Development highlighting the many issues related to the drone trial and lack of oversight and regulations. The original response by the Federal Minister acknowledges that a whole-of-government approach to RPAS (drones) will be required.

The response agrees with the recommendation to develop a whole of government approach to RPAS in Australia. The Department of Infrastructure, Regional Development and Cities will lead this work with relevant departments and agencies to develop a clear view on those matters that fall outside of the Civil Aviation Safety Authority's remit; including privacy, noise and environmental impacts. It is the intent that this work will help to clarify for the public, the separate areas of responsibility in relation to drone issues.

Given that there are no laws in place to manage the impacts of the drones, it is highly irresponsible and unethical that the trials continue. Until the Australian public can be assured of its safety and basic human rights (United Nations Human Rights Declaration Article 12), then all commercial use of drones should be ceased.

Airservices Australia – has no responsibility for unmanned aircraft

4) The extent of any environmental impact as a result of trialling drone delivery technology on:

a. Greenhouse gas emissions

The claims by Wing that drones will substantially reduce carbon footprint are incorrect. The reduction in carbon footprint by drones only applies to where they don't have far to fly and have a light load – therefore a very small component of the delivery courier industry. The Wing business case is largely based on flying deliveries a considerable distance. The claims fail to acknowledge

that by 2030 (or probably sooner) over 50% of cars will be electric; this change in itself will significantly reduce the carbon footprint of vehicles and delivery services. The research Wing refers to is by Professor Goodchild in the USA (Riot Act website). The article has been misrepresented by Wing as they only quoted selected bits, it actually states: “researchers found that drones tend to have carbon dioxide emissions advantages over trucks when the drones don’t have to fly very far to their destinations or when a delivery route has few recipients”. Trucks — which can offer environmental benefits by carrying everything from clothes to appliances to furniture in a single trip — become a more climate-friendly alternative when a delivery route has many stops or is farther away from a central warehouse”. The statement by Professor Goodchild “that drones have a less carbon footprint” is only correct when it applies to small and light goods:

<http://www.washington.edu/news/2017/05/30/drone-vs-truck-deliveries-which-create-less-carbon-pollution/>

If the ACT wants to significantly reduce its carbon footprint, then along with the light rail, the government should be encouraging electric vehicles, installing more charging stations, giving incentives to couriers and delivery companies to go electric.

b. Noise Pollution

Comments by residents in the Bonython area highlight the following:

- The drones are large (1.5 m wide/3m.long), very noisy like an F1 racing car and make a high-pitched sound which can be heard from a long way off. Drone noise has been measures at 85 decibels from 35 meters. They can be heard from inside closed houses, even with double-glazing.
- Over 80% of the residents in Bonython oppose the trial.
- No agency (ACT Government, CASA, Airservices Australia, EPA) will take responsibility for regulating the noise made by drones.

BAD has researched the dangers of noise pollution. The Public Health Association of Australia: Policy – Environmental Noise Policy (Attachment B) recognises environmental noise as a public health risk. It states, people have varying levels of tolerance to noise. In some situations noise may not be particularly loud, but may be distracting. Moreover, the repetitive nature of a particular noise and/or the inability of an individual to control it can cause annoyance. Examples include dogs barking and bass amplification of recreational music. Vulnerable groups, such as children, older persons, people with mental health issues, may be affected by noise in different ways compared to other members of the population

In addition, the author and scientist Dr Bruce Rapley states that modern technological environments produce noise on a basis never before endured by humans, and there is increasing evidence of serious threats to human and animal health. His book - Conversations for a Small Planet, Volume 3, Biological Consequences of Low-Frequency Sound, explains the adverse health effects of sound pollution from man-made technology. The most recent example of technological sound pollution comes from wind turbines, but he also stresses that this is only one source of modern environmental sound pollution – there are many others.

BAD consulted with a specialist musicologist and provided two videos of the delivery drones. The specialist acknowledged that the early drones were slightly louder than the later drones as they were a higher pitch, however, they stated that both sounds were very intrusive, in fact they described them as “shocking”. Two thirds of the sounds were mainly around high A/Bb nearly two octaves above middle C in the higher frequencies. The 2/3 sounds intersect and change between themselves. They commented, “They’re screeching, big - time. But there is a screech or two higher than in the main sound, which is really piercing. It sounds above high C (2 octaves above middle C. It is like 3 sopranos wallowing and swapping between themselves. One doesn’t hear the lower notes until right at the end of the video, and they are equivalent to the middle notes in the later video sound. The latter video is slightly quieter, BUT – the lower frequencies are potentially the big health hazards. Low frequency sound can be used as a weapon and has been known to cause insanity; you will need to research this further.

The Noise and Health article on Low frequency noise, the frequency range from about 10Hz to 200Hz, has been recognised as a special environmental noise problem, particularly to sensitive people in their homes. Conventional methods of assessing annoyance, typically based on A-weighted equivalent level, are inadequate for low frequency noise and lead to incorrect decisions by regulatory authorities. There have been a large number of laboratory measurements of annoyance by low frequency noise, each with different spectra and levels, making comparisons difficult, but the main conclusions are that annoyance of low frequencies increases rapidly with level.

<http://www.noiseandhealth.org/article.asp?issn=1463-1741;year=2004;volume=6;issue=23;spage=59;epage=72;auiast=Leventhall>

c. Native wildlife and domestic animals

- The local bird life has decreased in the area.
- Dogs and cats are reportedly stressed and injuring themselves as they are spooked by the drones.
- Neighbours are complaining because of the dogs barking continually on flight days.
- No independent avian study on impacts has been done.
- We have video evidence on our website of a magpie attacking the drone, and eyewitness accounts of other bird attack incidents.
- Other domestic animals are affected. For instance, the local Royalla newspaper reported "Royalla group began posting angry accounts of livestock being harmed as they ran in fear from the low-flying drones. Their group had trouble getting their voices heard as no media were interested as drones are cool, no parliamentarians were interested, CASA had approved the trial and the amount of noise this man was experiencing was not a concern to anyone".

5) Ways to improve the use of drone delivery technology within the ACT

BAD believe there are areas where drones can be very useful. These uses have also been posted up on our Face book page by our members. Drones need to focus on specialist and other emergency services, where they will make a valuable impact. There are many of these examples already in the community - life saving, aerial photography, search and rescue, surveillance, delivering immunisations and medical supplies to remote areas, surveying, digital surface modelling, aerial delivery of packages and humanitarian relief supplies, assistance with agriculture, wildlife research, power line inspections, etc

6) Any other relevant matters

All the issues were well known and identified in the Risk Assessment undertaken by CASA and the ACT Government (gained under FOI).

The decision to base the drone delivery trial in the ACT was initiated by the ACT Government and Google X. During this process there was no consultation with the public. Extracts from Hansard clearly show that this delivery trial is not about a delivering “coffee and burritos”, but an experiment in managing airspace and developing drone technology.

The risks outlined in the risk assessment are detailed below with the actual impacts of these risks:

- **Noise**

- The drones are large, very noisy like at F1 racing car and make a high-pitched sound which you can hear them from a long way off. NASA study says drones are more annoying than trucks, motorbikes, etc.
- No agency (ACT Government, CASA, Airservices Australia) will take responsibility for monitoring the noise made by drones.
- They can be heard from inside closed houses, even with double-glazing and it is worse when people have their houses open in warmer weather.
- During the trial, people elected to leave their homes to take a break from drone noise.

- **Privacy concerns**

- Surveillance and intrusion of privacy in people's own backyards.
- There is no open and transparent management of personal information collected.
- Wing state that images are stored for 30 days in the USA, however in that time we have no knowledge who has access to that data, for what purposes and is it being shared with a third party?
- Risks assessment acknowledges that there is “no recognised common law action in tort for breach of privacy”.

http://thelegaleagle.com.au/drones-neighbours-and-privacy/?fbclid=IwAR1fU2CplLwGoptRFdEEYr1WgcMVQ6DaQD3ikZabgneyVNddb3Jr8OA_dg

- **Impact on wildlife and domestic pets**

- The bird life has enormously decreased in the Bonython area.
- Dogs are reportedly stressed and injuring themselves as they are spooked by the drones.
- Neighbours are complaining because of the dogs barking continually on flight days.
- No independent avian study on impacts.

- **Loss of amenity – visual and noise pollution, emotional and mental health**

- Anxiety and stress levels due to anger are increasing every time they hear a drone fly over. This effect has been so extreme as to manifest in death threats to be made to Project Wing, as reported by ACT Police.
- No peace and quiet when going for walks in the suburbs.
- Some young children are too scared to go outside when the drones are around.
- Disrupting and disturbing for people who need to sleep (shift workers) during the day.

- People who suffer from chronic migraines report living in fear of the drone noise triggering the condition.
- Drones constantly flying at levels of 50 to 100 feet over people's backyards, and closer when they come down to deliver, making noise of up to 85 decibels is an outrageous, intolerable and unacceptable violation of their peace, privacy and basic human rights.
- **Cyber security**
 - Canberra has many sensitive government agencies. Parliament house recently constructed a “drone shelter” to prevent security attacks from drones.
 - Media reports of large companies (face book) breaching privacy and security.
 - A person bent on doing damage, collecting data, attacking government buildings etc would have the perfect cover for flying a drone when many other delivery drones are operating in the area
- **Sensitive location – geographical issue**
 - Not supposed to fly over nature parks and public areas, all these rules relaxed for this trial. When at Pine Island you can hear the high-pitched drones take off, where normally it was the sounds of birds and nature.
 - They fly over the local mountain bike trails and tracks around Stranger Pond, an area with many walkers including parents with children.
 - There are many identified high risks areas in ACT.
- **Distraction risks to drivers, cyclists and pedestrians, safety, collision with people, infrastructure, other drones**
 - Wing self report to CASA, and have not reported any safety issues, even though many cited by residents. Wing claim they are ‘controlled landings’, which we say are ‘unplanned landings’ caused by dangerous circumstances that Wing cannot control.
 - No independent body or agency which regulates or polices Wing.
 - There have been a number of mishaps that have been reported to us by residents that are not acknowledged by Wing, CASA or the ACT Government. For instance, we have video evidence of bird strikes and a drone delivery on top of a parked car.
- **Land use concerns. Delivery drones are not currently defined in the territory plan, thus not permitted except for a temporary use.**
 - Project Wing states in the media it is setting up a “permanent” base in Mitchell.
 - Why is the ACT Government permitting delivery drones without first changing their planning legislation?
 - Why are they allowed to operate on nature reserve and within the Murrumbidgee Corridor? This involves the commercial use of a public nature reserve. To operate elsewhere in the ACT they would also need to fly over public reserves.
- **Feedback and reporting (ACT government agency objections)**
- Other government agencies may raise concerns about drone use near or above their sites (eg. Alexander Maconochie Centre, schools, other institutions).
 - There is no specific and formally established avenue for residents to directly submit feedback or comment other than through Wing. Wing has already stated they will not release the feedback publically or to the ACT government. Wing is self assessing and undertaking their own review of the trial.
 - The ACT Government imposed this trial on Bonython residents with no consultation or consideration of the impact on people's lives. There has been no collaboration or collective decision making involving Bonython residents.
 - ACT Government has NOT accepted and acted on valid concerns by residents
- **Trespass**
 - No laws about airspace over homes (as other countries, including the USA have).
 - Recent media exposure of illegal drone activity.
- **Fire ignition**

- Not allowed to operate during period of total fire bans. Obviously considered a fire hazard in some circumstances.
- **Negligence**
 - Are we covered by public liability? No information on who is responsible for injuries.
- **Reputational damage**
 - Local business - the chemist and Mexican food businesses currently operating in the drone delivery service are not local to the area and undercut existing businesses.
 - Wing and the ACT Government are not presenting transparency on the drone issues.
 - Wing has provided information only in the form of advertising and marketing their delivery service.
 - The ACT Government identified “if the project is not supported by the community, or there is an incident or accident, the ACT Government may be held responsible - or for instance face adverse public comment or adverse findings in the event of a coronial inquest, or not being aware of incidents occurring. NOTE: CASA may face a similar reputational risk in terms of their role in providing regulatory approval.
- **Violation of our human rights, UN Article 12**
 - Because there are no regulations (except for CASA around safety) that cover the operations of the drones, it is difficult for us to challenge their use with legal arguments.
 - The drones interfere with our family/life and our quality of life. It is morally and ethically wrong that we are subject to this trial without any recourse.
 - This is a direct violation of our human rights as Article 12 of the Universal Declaration of human rights states “No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honour and reputation. Everyone has the **right** to the protection of the law against such interference or attacks”.
 - In a response from Minister for Infrastructure, Transport and Regional Development dated 5th December 2018, he admits there are gaps in the law and “they need to work with relevant agencies to develop a clear view on those matters that fall outside CASA’s remit, including privacy, noise and environmental impacts”.
 - Lack of compliance, no one responsible for managing drones, Wing self report.
- **Residential tenancy legislation**
 - The residential tenancy legislation of every State/Territory enshrines the right of tenants to quiet enjoyment, expanding in other jurisdictions to include the right to reasonable peace, comfort and privacy.
- **Parliamentary Inquiry in place (submissions due 22/2/19)**
 - An ACT Legislative Inquiry Assembly Inquiry has been approved following significant complaints about the drones since the trial started in July.
 - Gai Brodtmann has called in the Federal Parliament for an independent inquiry on the delivery drones and trial.
- **Purpose of drone deliveries - Unreliability and limited delivery options**
 - Low take up rates with only 1.5 – 2% of Bonython households electing to participate in the trial. Actual number is lower still.
 - There are a number of contribution factors which make many households ineligible for the drone delivery service. These include the following restrictions:
 - Drones cannot deliver to high rise buildings
 - Drones cannot delivery to other high density residences (units, flats, aged care, etc) as there is nowhere within these bounds that they can deliver a parcel
 - Drones cannot operate within national areas of significance – such as near Parliament House, Treasury, etc

- Drones cannot operate at night time
- Drones cannot operate over public areas, such as parks, schools, sports grounds, etc
- Drones cannot operate within 5km of an airport
- Drones cannot operate when there is a total fire ban
- Drones cannot operate in adverse weather conditions including high winds, storms and rain.
- Many parcels require a “signature” from the resident
- Drones cannot deliver many pharmaceuticals and medicines (only ‘over the counter’)
- Special requirements to leave parcels cannot be accommodated
- Drone can only deliver up to 1.2 kilos, any larger requires either multiple trips or a larger drone.

Attachment A: FOI request extension with ACT Government

Dear Ms Sheather,

I am writing to thank you again for your continued patience and the clarification you provided regarding the scope of your application submitted under the *Freedom of Information Act 2016* (the Act) for information on Project Wings Drone Trials in the ACT.

I am also writing to provide you with an update on processing underway for Part 2 of your application.

To date, over a thousand documents have been assessed in the processing of your application. Further assessment has been conducted to meet the requirements of your revised application received on 5 February 2019 and more than 40 documents have been identified as relevant.

The processing of your application involves extensive and complex third party consultation. Under the Act, we are obliged to consult with relevant third parties on information concerning them that may be released.

I understand you have made clear your preference that your application is finalised as soon as possible, however, not later than 15 February 2019. A full response to your application will not be able to be provided by 15 February 2019 due to the work entailed in meeting our requirements under the Act. Therefore, I am seeking your instruction on how to proceed with your application and provide options below for your consideration:

1. A complete decision is finalised by **15 March 2019** to conclude the assessment and consultation process for relevant documents.
2. A decision on access to documents that do not require third party consultation is finalised by **20 February 2019**, and a decision on access to the remaining portion requiring third party consultation is finalised by **15 March 2019**.

I want to assure you that we are working very hard to provide you with information you are seeking. Significant agency resources are dedicated to processing your request, with two FOI officers working on finalising the response to your application. I would like to thank you again for your patience, responsiveness and willingness to accommodate previous extensions of time and I hope that you will be agreeable to a further extension of time to **15 March 2019** to enable us to meet our obligations.

Your earliest advice on this matter would be greatly appreciated.

If you wish to discuss your request please contact me on (02) 6205 8995 or my manager, Ms Geneva Donne, on (02) 6207 9313.

Kind regards,
Daria.

Dr Daria Alieva | Freedom of Information and Records Officer

Environment, Planning and Sustainable Development Directorate | ACT Government

Phone: 02 6205 8995 | Email: daria.alieva@act.gov.au

Level 2, Dame Pattie Menzies House North Building | GPO Box 158 Canberra ACT 2601|

www.environment.act.gov.au | www.planning.act.gov.au

Attachment B

20 Napier Close Deakin ACT Australia 2600 – PO Box 319 Curtin ACT Australia 2605 T (02) 6285 2373 E phaa@phaa.net.au W www.phaa.net.au

Public Health Association of Australia: Policy-at-a-glance – Environmental Noise Policy

Key message:

PHAA will –

1. Advocate for environmental noise to be regarded as a public health issue.
2. Advocate for clear standards for prevention and management of noise.
3. Advocate for development and implementation of policies and strategies to promote health by reducing adverse environmental consequences from noise pollution.
4. Advocate for measures to raise community awareness of and commitment to implementing the necessary policy, structural and behavioural changes for addressing adverse environmental noise.

Summary:

Environmental noise is a public health issue that requires serious attention to limit its adverse effects as urbanisation increases. This policy describes environmental noise pollution and proposes action for PHAA to take.

Audience:

Federal, State and Territory Governments.

Responsibility:

PHAA's Ecology and Environment Special Interest Group (SIG).

Date policy adopted:

October 2017

Contacts:

Peter Tait & Lea Merone, Co-Convenors, Ecology and Environment SIG

The Public Health Association of Australia notes that:

1. Environmental noise is increasingly being recognised as a public health issue.¹⁻³

2. Sound is created when a vibrating source causes energy to travel through the air as pressure waves. The waves may be reflected or scattered by objects so that the sound reaching the ear may be different from the sound originally generated. The sound pressure level is measured in decibels (dB).

3. Common noise sources vary in sound level, for instance, normal conversation (60dB), lawnmower (90dB), chainsaw (100dB), rock drilling (120dB) and jet engine at 30 metres (140dB).⁴

4. Sound can also be characterised by their frequency (pitch). Frequency is measured in hertz (Hz), which gives the number of cycles that occur per second.

5. Noise is a sound that is loud, disturbing or unpleasant – in effect, unwanted sound.
6. People have varying levels of tolerance to noise. In some situations noise may not be particularly loud, but may be distracting. Moreover, the repetitive nature of a particular noise and/or the inability of an individual to control it can cause annoyance. Examples include dogs barking and bass amplification of recreational music.
7. Vulnerable groups, such as children, older persons, people with mental health issues, may be affected by noise in different ways compared to other members of the population.²
8. Environmental noise pollution relates to ambient sound beyond comfort levels. Numerous sources including traffic, construction, aviation, industrial, as well as some recreational activities exist.^{5, 6}
9. Deleterious effects of noise can include hearing loss,⁷ sensory effects such as pain, annoyance⁶ and sleep disturbance.^{8, 9}
10. Environmental sleep disorder is due to an environmental factor that causes either insomnia or daytime fatigue and drowsiness. Other effects include impairment of concentration, attention and cognitive performance, depression and irritability.¹⁰
11. The relationship between sleep and health is generally well accepted. Insufficient sleep can affect endocrine and metabolic function ¹¹ or trigger inflammation, which may contribute to cardiovascular events. CRP (an inflammatory marker) levels have been found to linearly increase with sleep loss.¹²
12. Long-term environmental noise exposure can affect stress levels,¹³ and may increase the risk of hypertension (aircraft and road traffic noise) and elevated risks of heart attacks (road traffic noise).^{14, 15}
- PHAA Policy Statement on: Environmental Noise Policy Statement**
20 Napier Close Deakin ACT Australia 2600 – PO Box 319 Curtin ACT Australia 2605 3 T (02) 6285 2373 E
phaa@phaa.net.au W www.phaa.net.au
13. Categorising noise with respect to sound level, pitch and intensity, and correct exposure is important in assessing impact.
14. The World Health Organization (WHO) published the Night Noise Guidelines for Europe. The Guidelines presented evidence of the health effects of night time noise and recommended threshold values to protect health. An annual average night exposure not exceeding 40 decibel (dB) outdoors has been recommended.¹⁰

The Public Health Association of Australia affirms the following principles:

15. Action to ensure a safe and healthy environment is a critical public health priority.
16. When society wide change is necessary for the common good, government's role is to lead, inform, regulate, monitor and enforce, and to motivate behaviour change by individuals and corporations.
17. Producers of pollution, including noise pollution, should pay the costs of remediation.

The Public Health Association of Australia believes that the following steps should be undertaken:

18. Competent authorities including government and relevant experts should work together to clearly define parameters for noise level, exposure assessment, and measures for assessing the health effects of noise.

19. Competent authorities should draw up “strategic noise maps” for existing major transport routes and other developments, using harmonised noise indicators L_{den} (day-evening-night equivalent level) and L_{night} (night equivalent level) as recommended in the EU policy.⁵

20. Proposed developments such as roads, rail lines, airports, mining, and industry should be required to undertake a strategic noise impact assessment before commencement of the development, and ensure noise minimisation design and engineering is included in development proposals.

21. Local noise issues should be identified through consultation with the public and local organisations. A policy to maintain acceptable amenity in terms of environmental noise should be developed and implemented at a local Council level. Strategies to reduce unacceptable noise should also be developed in consultation with residents and implemented at a local level.

22. A burden of disease relevant to environmental noise pollution should be established within constraints of current scientific knowledge.

23. A public health strategy should be investigated to reduce the number of people currently adversely impacted by environmental noise.

PHAA Policy Statement on: Environmental Noise Policy Statement

20 Napier Close Deakin ACT Australia 2600 – PO Box 319 Curtin ACT Australia 2605 4 **T** (02) 6285 2373 **E** phaa@phaa.net.au **W** www.phaa.net.au

24. Innovative strategies for noise reduction in existing buildings and in development of new building materials should be explored.

The Public Health Association of Australia resolves to undertake the following actions:

25. Advocate for development and implementation by government of policies and strategies to both promote health and reduce adverse environmental consequences from noise pollution.

26. Advocate for measures designed to raise community awareness of and commitment to implementing the necessary policy, structural, political and behavioural changes for addressing adverse environmental noise.

27. Work with other organisations/agencies at the national, jurisdictional and local level to support these actions.

Attachment C – Letter to Burgess

Minister for Economic Development
Minister for Tourism and Major Events

Obj #17/32079

James Burgess
Co-Lead
Project Wing
[REDACTED]

Dear Mr Burgess

Thank you for your letter of 13 November 2017 with an update on Project Wing's current trials in Queanbeyan and Royalla. I am pleased to hear that the trials are going well.

While I was not available to meet with you on your recent trip, I would be happy to take you up on your offer to see your operations early in the new year. I'll ask my office to be in touch about the details.

I note that you are hoping to move in early 2018 to a new site in Tuggeranong along Pine Island Road. I understand that your discussions with the Environment, Planning and Sustainable Development Directorate have been progressing well. This next phase would be world leading and I appreciate your assurances around safety.

I strongly welcome your plans for Canberra and the ACT Government is available to assist with these efforts where appropriate. Canberra is well placed for the rollout of new and disruptive technologies and I welcome your efforts to engage with local businesses to form part of the expanding product offering.

Thank you again for the update and I look forward to meeting with you.

Yours sincerely



Andrew Barr MLA
Chief Minister

13 DEC 2017

Attachment B – Zoning regulations

3 SITE HISTORY

3.1 Previous Investigations

Arcadis is not aware of any previous environmental investigations for the site.

3.2 Zoning

The site currently falls under multiple zonings. The land use zones and zone objectives are listed below:

CZ6: LEISURE AND ACCOMODATION

- a. Provide for the development of entertainment, accommodation and leisure facilities for residents of and visitors to the ACT and surrounding region
- b. Protect leisure and accommodation uses from competition from higher order commercial uses, and encourage activities that enhance the region's economic diversity and employment prospects
- c. Ensure leisure and accommodation facilities have convenient access to public transport
- d. Protect the amenity of nearby residential areas, with regard to noise, traffic, parking and privacy
- e. Ensure the location of facilities, and their design and landscaping is compatible with environmental values
- f. Ensure that the bulk, scale, size, design and landscaping of development is compatible with the surrounding landscape
- g. Encourage activity at street frontage level and provide an appropriate level of surveillance of the public realm



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 106

Date Authorised for Publication: 27 February 2019

VIA E-MAIL:

Standing Committee on Economic Development and Tourism

Email : LACommitteeEDT@parliament.act.gov.au

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

SUBMISSION: INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT

Personal Details:

Name:	
Postal Address:	
Phone:	
Email: (if applicable)	

Please note, I would like my submission to remain anonymous.

i would like to make a submission to the above Inquiry.

I am aware of the drone delivery trial that has been taking place in the ACT suburb of Bonython, by the American Google company Project Wing since July 2018.

I know people who live in Bonython who have been directly impacted by it. I have seen and heard videos of the drones as they fly over people's backyards and deliver goods. I am aware that their lives, the sanctity of their homes and amenity have been severely intruded upon for 6 months and that they are outraged and very angry and upset about this.

I am shocked that the ACT Government would instigate such a trial, to be conducted in the Australian Capital Territory. I am aware there is talk by the operator, Project Wing, of expanded operations early this year when no results of the Bonython trial have been made available to the public. It appears there may not even have been an evaluation of it undertaken, as the ACT Government allows Project Wing to self-report and self-assess.

I have heard the noise the drones make and I am aware that it has been measured at 80db!
It is an excessively loud, high pitched screaming noise which can be heard from all over the suburb and inside people's homes, sometimes waking them up from sleep. This is an appalling and unacceptable situation. People become unwell if they can't control their environments and are constantly subjected to excessively loud noise and intrusion into their lives.

Also the drones have cameras which are constantly recording downwards as they fly at 20 to 30m over people, as happened to my friends, who understandably feel indignant outrage about it. The public has no idea what happens to the film footage that is constantly being taken of them. I am now aware that it gets sent back to the USA. This also is an **outrageous invasion of people's privacy** and impinges on basic human rights, especially as the people of Bonython were not asked for their

permission or how they felt about it. There is the potential for such breaches of privacy and human rights to be illegal.

CASA has changed the usual Regulations that apply to drones to allow these Project Wing drones to fly within 5 m height and 2 m next to a person, without their permission. **This also is unacceptable!** It is exposing people to danger.

Drones can be blown by wind very easily on to people/children cars, buildings, power lines (causing bushfires) etc, and should not be allowed to fly so close to people because it is dangerous.

The ACT Government has told people it has no responsibility for the trial and has made no avenue of complaint available. (I am aware that 80% of Bonython residents rejected the drone delivery operation.). They told the many people who complained and have been distressed by it that they can complain to Project Wing.

The ACT Government, CASA, Airservices Australia, The Environment Protection Agency and the Federal Government all tell people that they are not responsible for the noise or privacy aspects of the Project Wing Bonython drone trial. This means that the excessively loud noise of the drones is unregulated, and no one is taking responsibility for the serious violation of people's privacy.

I am also concerned about the impact of the above on vulnerable people, such as the elderly and very ill. I believe the ACT Government is irresponsible and acting without integrity towards its constituents, putting money before people. I do not support the operation of drones over people's homes and in close proximity to them. The current regulations and compliance enforcements are inadequate to keep people safe and it is unconscionable to use people as guinea pigs in an experiment in corporate greed for international recognition.

Thank you for this opportunity to contribute to a significant social issue.



NAME

21 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT & TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE A.C.T.

Author - Frank Lissaman - 21/2/2019

PERSONAL DETAILS

Name>>>> Mr. Frank Lissaman
Postal>>> 5 / 45 Barr Smith Avenue
Address Bonython, ACT, 2905
Phone>>> (02) 6293 9304
E-Mail>>>> falissaman@bigpond.com

OPTIONAL

How long have you lived in the area <> 11 years

Occupation <> Semi retired, part time work local retail hardware

Please note - numbering protocols in this submission are the same as those used in the resolution passed by the Assembly on 1/11/2018 setting the Terms of Reference for the Inquiry

INTRODUCTORY REMARKS - I am a layman, with no special qualifications or expertise relating to drones or air space regulations. My comments stem from my personal observations as a resident of Bonython and my feelings as to the responsibility of governments to their constituents

1 (a) the decision to base the trials of the technology in the ACT & surrounding region

- <> I was unaware that the ACT Government had authorised Wing to conduct the trial. It was not publicised & residents were not informed or consulted.
- <> When some risk is involved ACT Govt normally makes a public announcement, say in the case of burnoffs or water quality problems, to allay resident's fears.- in this case fellow residents were left wondering if an arial attack was occurring when the first banshee-like wail was heard when the drone flights first occurred.
- <> Transparency of government decisions is essential to maintain public confidence. This lack of information displayed an appalling degree of arrogance and a lack of respect
- <> My brother & I discovered the location of the drone launching site by accident. The site was surrounded by a high mesh fence - there were no notices posted on the perimeter explaining the purpose of the facility. This should have been a minimum requirement for the operators to have provided.

1 (b) *the economic impact of drone delivery technology being tested in the ACT*
(1) investment (2) jobs created (3) extent of collaboration

<> I am not qualified, or in possession of relevant data to comment on these matters.I

think that disclosure of potential benefits by the Government would have created a favourable impression in the minds of residents, instead of a feeling that we don't matter.

PAGE 1

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT & TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE A.C.T.

Author - Frank Lissaman - 21/2/2019

- 1 . (c) *the extent of regulatory oversight of drone technology at various levels of government inc, but not limited to :-*
(1) *local authorities* (2) *Commonwealth agencies*
- <> My gut feeling is that the public must be protected by the Government insisting that drone delivery be subject to stringent regulations of appropriate authorities.
 - <> These regulations would include where they could (or could not) fly, provision for flights to be insured to cover personal injury or property damage where this resulted from negligence/accidents on the part of the operators.
 - <> Operators be held liable to prosecution where negligence caused such mishaps.
 - <> **I feel strongly that authorities should restrict flights to essential or emergency services and that "frivolous" use of drones to deliver food not be allowed where large shopping centres are located nearby**
 - <> Regulations should address noise levels, restriction of dissemination of data and photographic material. At present, I believe photographic material is held for a year, but nobody has revealed if those records have been sold on during that year.
 - <> I am most concerned about the invasion of personal space & lack of privacy.
- 1 . (d) *the extent of any environmental impact as a result of trialling drone delivery technology on:-*
(1) *Residents within the trial area*
- <> Noise levels are unacceptably high
 - <> Residents are being subjected to scrutiny against which they have no legal avenue of appeal.
- (2) *Impact on native wildlife*
- <> Barr Smith Avenue is a "bird corridor". Many birds inhabit surrounding trees & roost on light poles. My impression is that there are fewer birds in our area since the drone trial started.
- (3) *Impact on domestic animals AND (4) Greenhouse gas emissions*
- <> No comment, no reports received.
- 1 . (e) *ways to improve the use of drone delivery technology within the ACT.*
- <> Ensure that the regulatory authorities restrict flights to emergency services only
- 1 . (f) *Any other relevant matters*
- <> Experience in Bonython indicates that there are insufficient police to rein in bad

road behaviour - drivers exceeding speed limits in local streets and almost nightly burnouts. What protection will be available to residents when not one drone service operates, but more are flying. The potential risk for death, injury or serious property damage will dramatically increase.

PAGE 2

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT & TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE A.C.T.

Author - Frank Lissaman - 21/2/2019

- 1 . (g) *Information privacy*
<> We are already deluged with unsolicited Call Centre phone calls as a result of information being "sold on". If unscrupulous people obtain aerial surveillance photographs, will residents be subject to possible extortion attempts?

CONCLUDING REMARKS - I am in favour of technological advancement and can see the benefits that can result from judicious use of drones. It is most important that we retain the amenity of pleasant living in Canberra and this can be achieved, in part, by ensuring the safety and well-being of residents through strong regulation of drone operators and their craft.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

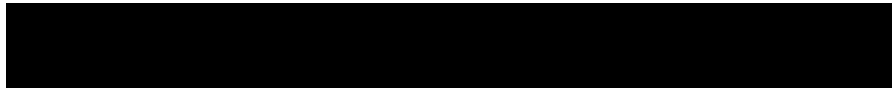
Inquiry into drone delivery systems in the ACT

Submission Number: 108

Date Authorised for Publication: 27 February 2019

Submission to House of Assembly Inquiry into Drone Delivery Systems in the A.C.T.

Name: Tim Field



Address:



This Submission relates primarily to Terms of Reference (g);
information privacy.

Summary.

Alphabet (Google) is in the data collection and aggregation
business.

Up to 10000 flights a day could have the potential to record
information on both users and also Canberrans who may not be
users of the drone service.

It is a matter for debate whether the purported benefits of the
service outweigh the potential loss of privacy by the vast majority
of Canberrans who will not be users of the service.

At a minimum, Wing's Privacy policy needs to cover non-users,
and undertakings by Wing covering this data need to be enforceable
by the ACT Government.

The benefits report commissioned by Wing is simplistic, and the
Committee may wish to have it subjected to independent analysis.

The Committee may wish to seek further information on the
following:

1. For non-users of the service, what data is collected by Wing, and how is that data stored
2. Is this data able to be aggregated with any other data held by Alphabet
3. Is Wing able to change the scope of data it collects from non users, and rules around sharing with other entities
4. Will individual non-users have the right to access and remove any data held on them by Wing
5. What are the legislative provisions covering the capture and storage of this data on non users
6. Will the ACT government legislate to protect non-users privacy
7. Which ACT government agency has responsibility in this area.

Background

Alphabet-Google's parent company- is close to the largest company in the world. By early 2018 Alphabet, had 85,050 employees and a market capitalisation of \$727bn, making it the second most valuable public company in the world, beaten only at that time by Apple.

Its core business model is the collection and monetization of data.

Wing is not some local hi-tech start up, but is part of Alphabet.

Data Collection

Looked at in this context, one could speculate that an important function of the Wing proposed drone service is the collection of data. Consistent with Google's operating model, a service is provided to users, which generates a flow of data.

Wing indicates that there could be more than 10,000 drone flights a day once things get up and running (CT 10 December).

Of course, as those drones fly over our houses, they may have the potential to record our comings and goings, how many children live where, what sort of car is in the driveway etc. And it will be difficult to know if a specific flight is actually delivering something, or

returning from a delivery, or just flying overhead recording information.

At the risk of sounding dramatic, the Wing drone delivery system could form the basis of a surveillance network.

Wing's Privacy Policy Australia on its website relates to users of the service. It allows, both automatically and by consent, to the sharing of data. This can be argued as reasonable-as with the use, for example, of other Alphabet services. Users opt-in. These users are also covered by Federal legislation, as a smartphone app is used.

The drone service also collects data on non-users. The Wing website indicates that:

The drones have downward-facing cameras that could gather images of your property (and persons on that property) while they overfly.

The data the camera captures is a low-resolution and greyscale format, and is only available to a small group of engineers for the purpose of analyzing safety and performance criteria.

It is not clear what policy and regulatory frameworks cover any such information. The Wing Privacy policy only covers users of the service.

Wing could also, presumably, at its discretion, change the quality of the information it collects from non-users, and indeed, who has access to it. This information could be shared with other Alphabet companies.

The legislative and regulatory arrangements governing the capture, storage and use of this information need to be clarified. This is presumably an ACT Government responsibility.

Further, if Wing gives agreed undertakings regarding this data, for example, as to its quality and who it is shared with, these undertakings should be enforceable, and penalties applicable for breaches.

Non-users do not opt-in, gain no benefit and have no contractual relationship with Wing, and so need government to protect their

privacy.

It preferable for all concerned to get this right at the beginning, rather than trying to catch up later.

Benefits outweigh the costs?

While a matter for judgment, Canberrans may not be willing to trade off possible loss of privacy for the purported benefits.

The report commissioned by WING ¹ should not be taken as a balanced assessment. For example, its headline finding is that drone delivery will 'grow' retail sales by \$30-40 million in 2030. All things being equal, this spending will lead to reduced spending elsewhere. Depending on how that plays out, the effects on employment, and some businesses, could be negative. The report's assessment of environmental impacts is also selective.

The Committee may wish to have the report assessed independently.

¹ Submission no 12

Faster, Greener and less Expensive

The potential impact of delivery drones in the Australian Capital Territory.
Report prepared by Alpha Beta for Wing, November 2018



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 109

Date Authorised for Publication: 27 February 2019

Inquiry into drone delivery systems in the ACT

The ACT Equestrian Association Inc (ACTEA) welcomes the opportunity to contribute to the important consideration of the impact of delivery drones in the ACT. ACTEA is a recognised umbrella organisation representing 18 affiliated sporting and recreational horse riding groups in Canberra. ACTEA promotes the needs of the equestrian community to government and the community, works to ensure equestrian activities have access to suitable facilities for all disciplines and supports its affiliates on significant activities and issues. Based on a Rural Industry Research and Development Corporation report on the value of recreational horse riding, it is estimated that equestrian activities contributed around \$25 million to the ACT economy annually.

ACTEA has been concerned about drones for some time now. The ACT Government estimates there are 1700 recreational horses in the Territory living on government and private horse agistment on the edge of suburbia. Some horses paddocks, like Illoura and Curtin, are surrounded by suburbia. This agistment is linked by a system of recognised equestrian trails and the Bicentennial National Trail.

Horses are prey animals with a highly developed set of survival skills to prevent them becoming lunch; the fact that they have no natural predators in Australia has done nothing to diminish their natural instinct. A horse's hearing is much keener than humans. Horses can hear low to very high frequency sound, in the range of 14 Hz to 25 kHz (human range = 20 Hz to 20 kHz). Their ears can rotate nearly 180 degrees from front to back. They can hear sounds from greater distances than we can, several kilometres away. They are more reactive to loud noises than we are. Noises from unfamiliar directions, like right above them, can be confusing. Horses grazing in the vicinity of drones register the sound of the drone before the machine even becomes visible to the human eye. A horse panicked by a sound it cannot understand can throw its rider, bolt, end up in traffic, injure itself and those around it.

Since 2017 the ACT Equestrian Association has received reports of recreational drones causing concern to the Canberra equestrian community:

- flying over herds in government horse paddocks causing them to bolt, in one case while a person was with the herd
- flying over a person on horseback in a public place causing her horse to shy
- flying over a pony club rally day event causing horses to shy and throw their young riders.

This is no small matter here or in the rest of the world.

- In October 2015, a horse from West Yorkshire Police's mounted unit was spooked by a drone flying close to his paddock. He tried to jump a fence and collided with a wooden post. He died on his way to the vet.

-In January 2017 a horse attached to a carriage outside a luxury hotel in Zermatt, Switzerland, had to be put down after being spooked by a drone overhead. The

horse took flight at such a pace that it suffered fatal fractures.

- In the United States there have been reports of drones being used to deliberately frighten horses.

The *Canberra Times* in July 2017 reported Project Wing's larger, licenced drones frightening horses near Fernleigh Park at the beginning of their delivery trials.

In an attempt to find some way to control drones flying over horses ACTEA spoke to the ACT Rural Police and the Rural Officers in ACT Parks & Conservation. We were told that there were no actual laws prohibiting the offending behaviour so no one was committing a crime by harassing horses on public land and it is almost impossible to police. After some effort we managed to get a meeting with CASA in 2017 to talk about the issue. They said, basically, that drone regulation had got away from them and they did not have the resources to police recreational drones and were not much interested in any case unless their activities threatened commercial flying space. The Guidelines for flying recreational drones in 2017 did not prohibit harassing animals and still does not.

We hold out some hope that the new proposal to enforce registration of drones weighing 250g and above will at least provide an educational opportunity for those users who until now have just ignored the Operating Guidelines if they even know they exist.

The arrival of Project Wing raised the issue to another level. Their drones are big, very loud and high pitched, almost designed to disturb a horse. Until now, because of the restrictions CASA has placed over their operation, Project Wing has had a limited flying area. ACTEA has spoken with the project team frequently since they arrived in Canberra to express our concerns and have been able to provide them with information about the horse riding networks in their area of operation. From both Bonython and Mitchel it has, and will, be possible for them to avoid paddocks and recreational riding routes.

Our concerns are twofold:

- that, if allowed to continue, Project Wing will move to delivering across the ACT. To minimise public anger at the intrusion on the amenity of innocent bystanders it is probable that the drones will be programmed to use routes over public open space as much as possible – which is where recreational horse riding takes place and
- that, all efforts by project Wing to reduce the noise impact of their drones will be aimed solely at human hearing and do little to reduce the impact on equine aural characteristics

A great many of the equestrian trails in Canberra are marked on the Canberra UBD and it is easy to see how the likelihood of having your horse panicked by a drone anytime you went for ride is of great concern. As we cannot imagine that Project Wing will be given a monopoly over deliveries, the risk to the life and limb of both horses and their riders will be compounded exponentially, should this technology be given approval. Potentially an entire recreational activity could be made untenable because some people are too lazy to go out for a cappuccino.

Apart from the horrendous noise, a concern about these delivery drones is that their routes are pre-programmed and we are told they do not carry cameras. In this case there is no way a drone could be operated to take evasive action if it came across horses in the space below it. Currently, drones cannot be operated blind, they either have to be in the line of sight of the operator or have cameras. Project Wing is seeking to operate a machine that will take no cognisance of its environment or the impact of its passing. Having cause havoc it would just pass on.

Despite our conversations with Project Wing and their willingness to talk to us ACTEA is not at all confident the enthusiastic proponents of this technology understand its real impact on defenceless people and animals subjected to its noisy intrusion. At a recent meeting we were told that, as most recreational drones would soon have to be registered, horse riders would be able to use a (yet to be developed) Google ap which would record the registration number of an offending drone which could then be reported to CASA. We were left wondering which hand you would be using to activate the ap while you struggled to control a panicked 500 kilogram animal. Perhaps you are meant to do that while lying on the ground listening to your precious horse gallop off into the distance?

The complaints made by the residents of Bonython about the impact these machines have had on their right to peaceful enjoyment of their homes in the Bush Capital are very telling. The message the government is sending by its silence on this matter is that it puts the possibility of a financial benefit from a relationship with Google over the amenity of its rate payers.

ACTEA believes there is a place for drone technology in scientific research, land use management, stock management and even emergency services. But it should always be used in the hands of or with the permission of the owners of land over which these things fly and with the greatest respect to the privacy of those land owners. If we do not limit this technology now, it will become a monster very difficult to put back in its box.

ACT Equestrian Association Inc
PO Box 4 Curtin ACT 2605

Contact:





LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 110

Date Authorised for Publication: 27 February 2019



Mr. Jeremy Hanson MLA
Chair
Standing Committee on Economic Development & Tourism
GPO Box 1020
London Circuit
Canberra ACT 2601

Dear Mr. Hanson,

Inquiry into Drone Delivery Systems in the ACT

Thank you for the opportunity to make a submission to the inquiry into drone delivery systems in the ACT. We would be willing to appear in front of the inquiry to further explain and amplify our submission.

Background

NODRONE.ZONE is a community-based lobby group. Participation in the group is open to all sectors of the community who share similar concerns about the current lack of clear legislation, regulation and delineation of government agency responsibility (both Federal, Territory/State and Local) regarding matters concerning the commercial use of Remotely Piloted Aircraft Systems (RPAS) also known colloquially as “Drones”, and how this may negatively impact the community.

Our Position:

NODRONE.ZONE recognizes that with evolving technologies and disruptive innovation, new competition is ultimately inevitable.

In our open market system, it is also accepted that new competitors should be capable of entering and exiting the market relatively freely. This is on the proviso that these players are

prepared to abide by the legal and regulatory frameworks that exists for their specific market space.

However, we have seen from the ACT drone delivery trials, that where there is a lack of clear legislation, regulation and delineation of government agency responsibility especially as to where affected or aggrieved members of the community can take their concerns, this has the potential to result in community disquiet. This situation has already been clearly witnessed with the previous drone delivery trials undertaken by Wing in Bonython.

NODRONE.ZONE takes the position that new entrants to a market with new technologies or disruptive innovation should have no measurable ill effect on those individuals that deliberately choose not to avail themselves or partake in the goods and services provided by the said market provider.

A clear example of how this applies has been the entry of Uber to the market competing with the Taxi and Hire Car Industries.

- To previous operators in the market the arrival of Uber has created new competition,
- To the participating consumers they now have the benefit of more choice of products, services and pricing options within this market,
- More importantly in this case of a consumer that deliberately chooses not to avail themselves or participate in that specific market sector there is no direct positive or negative impacts to them.

In the case of commercial drone delivery services, this too is new technology and an example of disruptive innovation. In terms of existing market players, it is most likely to impact some existing courier and delivery services. However, unlike Uber (competing in the Taxi/Hire Car industry) as a consumer, the individual is potentially impacted even if they deliberately choose not to partake in the services provided by commercial drone delivery operator.

The impact to non-participants is manifested in the following ways:

- Potentially there are overflights of commercial drones flying over residential properties resulting in what can be deemed as unacceptable “excessive noise” for a residential area¹.

During the Bonython trials sound pressure level readings (“noise”) of between 70-80dB(A) were regularly measured by residents during Wing drone overflights and delivery in adjacent and nearby properties. It should be noted that the standard permissible “day time” noise levels in ACT residential areas should not normally exceed 45dB(A) according to existing regulations.

Unfortunately, as RPAS are considered Aircraft, the legislative framework (Both Federal and Territorial) places the enforcement of action against noise generated by drones in a “grey area” allowing any complaint to fall out of scope or responsibility of any given agency:

- The Department of Infrastructure, Regional Development and Cities are ultimately responsible for **Noise Certification** of all Aircraft – thus they set the level of noise that is acceptable for all operating aircraft to generate.
- AirServices Australia do not have their usual “noise” NCIS related responsibility unless the RPAS flies in a **controlled Airspace** – delivery drones currently operate outside controlled airspace.
- The ACT Environment Protection Authority (EPA) currently defers all noise complaints regarding RPAS to the “relevant” Federal Agencies as they do not **currently** have jurisdiction over aircraft in general or more specifically RPAS related noise.

Clearly this is the greatest area of frustration and concern as there appears to be no legislation or regulation that clearly defines the acceptable levels of noise that can be

¹ Noise Standards for Residential Areas in The Environment Protection Act 1997 (the Act) and the Environment Protection Regulation 2005

generated by commercial RPAS. Furthermore, there is no specific agency or agencies that are currently capable (due to lack of legislation and regulation) or otherwise williness to take carriage and responsibility.

Whilst the figures given by Wing and their consultancy agency AlphaBeta appear to be somewhat rubbery it has been reported that:

- Anticipated drone flights by 2030: *“...up to 5.6 million drone deliveries a year by Wing and any other operators that come in or 11,000 a day. If each delivery is a flight that means 11,000 round trips, from the seller to the buyer a day.”²*
- This needs to be contrasted with AirServices aircraft movements in and out of Canberra Airport (all movement types) of 61,864³ for the annual year January-December 2018

It is anticipated that one commercial provider alone will have more drone movements in less than a week than is expected at the airport in over a year (This is even allowing for 100% growth in the number of aircraft movements in and out of Canberra airport by 2030) Obviously (unregulated) “Aircraft Noise” created by delivery drones of this magnitude is totally unacceptable by any measure.

- Potential invasion of privacy due to invasive imaging technologies used onboard the drones collecting both imaging, telemetric and spatial data.

in the case of Wing it is known that this data is stored overseas outside of the purview of the Office of the Australian Information Commissioner. Whilst it is agreed that when in public spaces the right to privacy cannot be reasonably expected, within the

² <https://www.smh.com.au/environment/climate-change/more-than-ten-thousand-drone-flights-a-day-in-canberra-20181206-p50kim.html>

³ <http://www.airservicesaustralia.com/wp-content/uploads/Airport-Movement-Calendar-YTD-November-2018.pdf>

confines of an individual's private property boundaries there should be a reasonable expectation of privacy unless explicit consent is given for the collection and use of said data.

It has also been alleged that Wing has approached other businesses that collect similar forms of data and offered to enter into agreements to mutually share data collected. Should these alleged actions be proven it would indicate that there is scant respect for data privacy and begs the question what else in terms of data is being collected, and what is the data actually being used for.

- Potential issues of safety: Whilst RPAS safety operations are generally covered under the auspices of CASA (Civil Aviation Safety Authority) there needs to be clear delineation of where ACT WorkCover can become involved should an incident causing damage or injury occur.

It should be noted that during the trial period Wing were given specific exemptions that reduced the distance they could operate their drones near people from the standard 30m radius to a cylinder a mere 5m high and 2m from either side of a person. As drone deliveries expand this will mean that there will be more close proximity operations especially in overflights of more densely populated areas. Whilst there have been no significant drone failure or incidents causing serious damage or injury to date during the trial, no technology is 100% fail proof and a serious incident or injury is ultimately inevitable.

- Potential negative impact on native wildlife: During the Bonython trails it was noted that there was anecdotal evidence that whilst the drones were flying avian wildlife was significantly diminished or otherwise "driven away". It has been reported that when the drones ceased flying the wildlife has started to return.

Before any fulltime commercial operations commence there should be appropriate environmental impact studies undertaken, where an area has a significant avian

wildlife community, these areas should be potentially excluded from any flight path overflights and operations.

Our Preferred Recommendation Outcomes from The Inquiry:

1. That the ACT Government work with the relevant Federal agencies to ensure that there is a comprehensive “end to end” Legislation and Regulation framework covering all aspects of commercial RPAS operation at both the Federal and State/Territory levels.
2. That the Territory introduce appropriate specific legislation and regulation to provide appropriate local controls and enforcement capability for businesses within the Territory operating RPAS including:
 - a. Introduction of appropriate controls limiting noise levels of RPAS to that of an equivalent that does not exceed the current Noise Standards for Residential Areas in The Environment Protection Act 1997 (the Act) and the Environment Protection Regulation 2005 with no specific exemptions for commercial RPAS unless being operated for the purposes of law enforcement, management of essential services or other emergency services.
 - b. Introduction of appropriate controls ensuring that data collected by RPAS from over flight of private property must be handled in accordance with Australian Privacy Principles and require written consent for said data to be used for any commercial purposes.
 - c. Introduction of appropriate controls to ensure the involvement of ACT WorkCover in the event of any injury or damage caused by commercial RPAS operations
 - d. Introduction of appropriate controls to ensure that operation of commercial RPAS does not occur in areas of natural wildlife sensitivity unless the operations is for the purposes of law enforcement, management of essential services or other emergency services.
3. That the ACT Government should postpone and not approve any further drone delivery trials or any ongoing businesses operations where commercial drone delivery services and activities will occur until:

- a. A comprehensive evaluation of the Bonython Drone Delivery trial has been properly conducted and made available to the public. This evaluation will potentially highlight and flush out all the compliance and enforcement issues that the community group “Bonython Against Drones” (BAD) allege have occurred during the trial.
- b. That an “end to end” Federal & State/Territory Legislative and Regulative framework regarding Commercial RPAS operations is in place and fully enacted.

We trust that this document meets with you're the Committee's approval. If there is any further information we can provide we would be pleased to do so. As we have already previously indicated we would greatly appreciate the opportunity to present to the Inquiry in person.

Yours sincerely

Jonathon Reynolds
(on behalf of NODRONE.ZONE)
22 February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 111

Date Authorised for Publication: 27 February 2019

Amanda Ruth Barney



I am writing to express my concerns about the introduction of commercial drones in the ACT. Chief among my concerns is the impact on the environment. Apart from the very real danger of mid-air collisions between drones and birds, drones have been shown to cause animals to be unduly stressed, which then can affect breeding and/or cause them to leave an area. For example, a [US study](#) revealed bears exhibit a stress response to drones.

According to an article in the [National Geographic](#):
'In almost all of the trials, the bears' heart rates—measured by sensors previously implanted in the animals' bodies—went up significantly, especially when the bear was surprised by the drone. A big boost even occurred in a female bear who had recently gone into her den to hibernate.'

In 2014 the [Yosemite National Park](#) banned drones because of the negative impact they were having on the environment and safety. Here in Australia researchers, who use drones to monitor wildlife, are so concerned about the impact of drones, that they are calling for strict protocols. See for example:
[What Impact Do Drones Have On Wildlife](#).

Despite the growth of Canberra, it is still known as the garden city, and many people choose to live here because of the way it is integrated with the natural environment and its rich and diverse wildlife. With climate change already having caused the extinction of many species of animals and insects, and with many more under threat, I urge the ACT government to seriously consider introducing a technology that will put our ecosystem under more stress.

As well, drones will negatively impact on the city soundscape and consequently the liveability of Canberra. The relative quiet of Canberra (and the joy of being able to hear bird calls) in comparison to other cities not only attracts people to live here but is something I believe we should cherish and safeguard. A [NASA](#) study found that the buzz of a drone is more annoying to people than the rumble of cars and trucks.

Of concern too is the very real potential for injury from falling drones. Appearing before Senate estimates, Mr Chris Manning from the Australian Transport and Safety Bureau said in relation to drones and aviation safety that 'anything in the air is a risk' (Budget Estimates Hansard, 23 May 2017, p. 134).

While I can appreciate that drones can have life-saving applications (for example, delivering medicine to housebound people, search and rescue), I strongly believe we should limit them to these types of operations and for research purposes rather than allow them to operate commercially.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 112

Date Authorised for Publication: 27 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Submission- Inquiry into Drone Delivery System in the ACT
Date: Friday, 22 February 2019 12:08:47 PM

Standing Committee on Economic Development and Tourism

Submission: Inquiry into Drone Delivery System in the ACT

From

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

<!--[if !supportLists]-->• <!--[endif]-->Please note I would like my submission to remain anonymous.

I am pleased that I am not living in the Canberra where heavily populated areas are now experiencing deliveries of goods by drones. I have seen video footage of the deliveries by drones and can't believe that this horrid noise is permitted. It must be difficult to live near others who continually use this service. Noise pollution, many times and at all hours, at its worst!

I am shocked that the drones are able to fly over populated areas. Surely this is a huge safety risk to people, pets and property and creates a hazard to all. I believe a drones success largely depends on the experience of the operator. Pilot error is real and could be very harmful. Safety is a huge concern as a fault or failure or loss of power or signal may injure those below. Accidents waiting to happen!

I am not totally against the use of drones and see the use for them in Emergency work, for land owners and beach patrols etc.

Please consider the above and stop the use of drones for the delivery of goods. The noise is unbearable and the risk to the safety of people and property is real.

Thank you.

[REDACTED] 22nd February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 113

Date Authorised for Publication: 27 February 2019

The Standing Committee on Economic Development and Tourism

Inquiry into drone delivery systems in the ACT

Phillip Balding

[REDACTED]

[REDACTED]

[REDACTED]

To the Committee for the Inquiry into drone delivery systems in the ACT

I strongly support drone deliveries in ACT suburbs. I have about 180 members that agree with me on a Facebook group Bonython For Drones.

I have no interest or investments in drones and have never owned or flown one, I am only interested in saving my friends and family money.

I have personally been to a friend's Bonython residence during the trial to experience my own food delivery,

and have regularly been in the suburb and seen the deliveries in action.

I will address the concerns from opposing residents and throw in my opinions.

Choice of location for the Trial:

A trial in Bonython - an affluent area in a supportive, progressive government environment was a good idea.

I would support any trial with mere qualitative evidence of benefits - because it's a trial, not a rollout.

Wing Delivery ticked the boxes for community consultation – handing pamphlets and invitations to consultations.

Unfortunately, Wing Delivery pamphlets were deemed as advertising material so 'no junk' post boxes weren't included for invitations.

If this is not sufficient community consultation then start a separate Inquiry into Community Consultation Systems in the ACT.

Noise:

I witnessed a drone deliver only 4 doors away and for a few seconds only I heard a faint buzz (from standing outside). A dog barking from 4 doors down makes much more noise.

I don't think the drones are disturbing after maybe 40m - most of that distance can be kept in height.

I can understand that a drone regularly delivering next door, or flying over a roof could annoy some residents.

I would suggest the drones avoid a flight path over homes at the owner's request. ie opt-out, for noise reasons only.

I previously lived next to a busy train track for a while and adjusted quickly – and joined the thousands of neighbours who don't even notice the 6 seconds of loud noise every half hour.

People accustom to anything very easily.

Privacy:

As far as I'm aware the cameras are for landing and dropping packages only.

A drone has no more vantage than the combination of satellite imagery and walking along a footpath past the front door –

If people are seriously irrationally concerned about privacy, a regulatory measure could be to engineer the cameras to be turned upwards during the flight.

If technological advances silence the drones I see no reason why they shouldn't be allowed to fly over any suburban homes.

Safety and legality:

The safety exemption for a licenced business to manage and control drone deliveries is no different than special licencing for handling fireworks, asbestos, uranium, heavy vehicles, powerlines, even workplace desk assessments.

I trust a private company to handle the safety and a regulatory body to watch them, it's business as usual.

If the theoretical perfect drone delivery system actually does conflict with the Civil Aviation Act or any other pseudo-legally pseudo-expertly cited legislation by drone delivery opponents, I trust that this committee will move to seek legislative amendments.

The government should continue cracking down on members of the public operating drones illegally. This is a separate issue - we don't ban all cars because some people drive unregistered cars.

Unnecessary:

There seems to be a generational attack on how young people should be spending their money, like Smashed Avo 2.0.

I personally have 3 housemates that each order Uber Eats at least twice a week, costing at least \$5 per delivery plus Bundled meals which are sneaky marketing and consumer manipulation to make you pay more for delivery without realising.

A drone delivery would not have to undergo these tactics because it is inherently cheap enough to deliver for a small fee.

This is the major reason I got on board with drone deliveries and want them to succeed – I want my friends and family to save money - without getting in their ears about cooking and investing, and annoying them.

Last year research from Finder found that Aussies spent a growing \$2.6bn pa on food and drink delivery (about \$1,590 per Australian per year)

(<https://www.finder.com.au/australians-spend-1590-each-year-on-delivered-food>)

Not to mention small pharmaceutical and hardware deliveries. I went to Bunnings 3 times in the past week to get the right small parts that I needed.

I would have paid more than double to order the correct part online once and have it delivered.

Economic benefit to ACT:

The trial apparently brought no private investment to the ACT – this is because it was a one off trial rather than a rollout – I am proud the ACT government support innovation.

Environment:

Once the deliveries start from an industrial area in Mitchell this anger about disturbing birds will be redundant regardless.

It would probably be best to fly from industrial areas rather than near national parks.

In saying that, I don't think any sensitive species are peacefully living on the edges of suburbs alongside humans, cars, cats and dogs - they have long since migrated elsewhere.

I would be surprised if bird disturbance isn't a myth and I would be happy to see proper research if drones are going to be based near bird nests.

As for the packaging – food delivery is already has a lot of packaging there is no difference.

Most of it is recyclable and coincidentally deliveries occur in your own home where you have recycling bins, rather than at the takeaway shops which mostly have waste bins.

The reduction in my ill-purchases at hardware stores alone would negate Australia's entire landfill.

An emissions reduction nation-wide would be far more beneficial for the environment.

Jobs:

I support the efficiencies made in replacing a car with a drone and ACT residents can use those savings to spend and employ elsewhere.

I will add that the efficiencies of Dark Kitchens on cheaper leases away from high foot-traffic areas like typical restaurants can be a huge cost reduction for the ACT consumer.

Detriment to the community:

Saving money and reducing emissions is a positive for the community.

The opponents of Bonython drone deliveries make no effort to become informed and or work with Wing Delivery and establish compromises such as re-routing, therefore it is my understanding the concerns are coming from a change-phobic, technophobic resistance.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 114

Date Authorised for Publication: 27 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Standing Committee on Economic Development and Tourism: Inquiry into drone delivery systems
Date: Friday, 22 February 2019 12:21:21 PM

Please note, I would like my submission to remain anonymous

I am writing to express my dismay at the proposed adoption by the ACT Government of commercial drone delivery services.

All technology is both beneficial and detrimental to varying degrees depending, in part, upon the use to which it is put. As such, great caution and thorough, transparent and independent assessment must accompany the adoption of new technology. This appears to be missing in the ACT Government's embrace of Wing's commercial reach into this untested field.

I am concerned that the 'quiet enjoyment' of my home and neighbourhood will be seriously disrupted. This is so much a feature and draw card of Canberra, and already an expectation in tenancy and neighbourhood concerns;

I am concerned about safety issues including, but not limited to, technology failure, appropriateness and effect of delivery in highly vegetated areas and air space controls;

I am concerned about the effect on native animal and birds, yet another a feature of Canberra. The initial fright and ongoing fear factor of noise and intrusion is a major disruption to birds leading to abandoning nests and habitat and to their ultimate silence;

I am concerned for our domestic animals. The same fear factor causes a great deal of anxiety in them - wasn't that one of the reasons put forward for banning fireworks - and dogs' constant barking through the neighbourhood is another disruption to the 'quiet enjoyment' of our homes;

I am concerned that the suggestion of 'creation of jobs' be thoroughly analysed and clearly articulated for both short term and long term outcomes. Likewise, 'benefits to the economy';

I am concerned about privacy, not only the potential use of data gathered by the drones even in the legitimate course of their service, but also by the proliferation of drones that may disguise the presence private/stalking/surveillance drones. This is of particular concern for people experiencing threats of domestic and other violence;

I am concerned that sufficient time be allowed to carefully establish the necessarily complex regulations, including provision for oversight and robust enforcement of compliance before any such service is considered for implementation.

I am concerned that sufficient time be allowed for broad consideration of the implementation of this technology, of which the commercial delivery service is just a part; that it not be limited to economic and environmental departments of government but that it includes whole of government such as health; that the far reaching implications on all aspects of our lives in Canberra and what sort of community we envision are thoroughly thought through.

This technology heralds a huge change and is too big to be rushed into.

Thank you for hearing my concerns.

Yours sincerely

A black rectangular redaction box covering the signature area.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 115

Date Authorised for Publication: 27 February 2019

From: [Helen Turner](#)
To: [LA Committee - EDT](#)
Subject: Inquiry into drone delivery systems in the ACT
Date: Friday, 22 February 2019 1:35:25 PM

J. Turner



22/2/2019

Dear Sir/Madam

Thank you for the opportunity to comment upon the drone delivery technology trialled over Bonython in recent months.

My family and I have lived peacefully in Bonython for the past eleven years. Our home backs onto the reserve at the top of Mt Stranger and due to our location we rarely even hear traffic other than joggers, kangaroos and dog walkers on the nature path behind us. We've always felt fortunate to live so interconnected with nature, in particular the bees and birdlife in our yard, which was a huge reason we choose to buy in Bonython.

The drone trial signalled the end of that serenity. Not just for my family and I who enjoy a sleep in on the weekend after working all week, but also the distressed pets and birds confused and scarred by the horrid howling of the low flying lawn mowers. More concerning though, is that Bonython is home to a growing number of elderly residents who are ex Defence personnel, some of whom have traumatic memories of helicopters during conflicts such as Vietnam. It is understandable that the sound of these loud and excessively large drones could act as triggers for PTSD in a group who were unlikely to have had access to quality (if any) mental health services during their military service.

Canberra has seen an inordinate amount of development in the last decade and I feel that the environmental and personal consequences have not been adequately addressed.

How about getting NBN in Bonython instead, or more effective public transport?

Please consider residents, wildlife and the social and environmental impacts over greed and commercialism.

Thank you

Jelena Turner



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 116

Date Authorised for Publication: 27 February 2019

VIA E-MAIL:

Standing Committee on Economic Development and Tourism

Email : LACommitteeEDT@parliament.act.gov.au

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

SUBMISSION: INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT

Personal Details:

Name:	
Postal Address:	
Phone:	
Email: (if applicable)	

Please note, I would like my submission to remain anonymous.

I would like to make a submission to the above Inquiry.

I am aware of the drone delivery trial that has been taking place in the ACT suburb of Bonython, by the American Google company Project Wing since July 2018.

I know people who live in Bonython who have been directly impacted by it. I have seen and heard videos of the drones as they fly over people's backyards and deliver goods. I am aware that their lives, the privacy of their homes and amenity have been severely intruded upon for 6 months and that they are outraged and very angry and upset about this.

I am shocked that the ACT Government would instigate such a trial to be conducted in the Australian Capital Territory. I am aware there is talk by the operator, Project Wing, of expanded operations early this year when no results of the Bonython trial have been made available to the public. It appears there may not even have been an evaluation of it undertaken, as the ACT Government allows Project Wing to self-report and self-assess.

I have heard the noise the drones make and am aware that it has been measured at 80db. It is an excessively loud, high pitched screaming noise which can be heard from all over the suburb and inside people's homes, sometimes waking them up from sleep. This is an appalling and unacceptable situation to inflict on people. People become unwell if they can't control their environments and are constantly subjected to excessively loud noise and intrusion into their lives.

Also the drones have cameras which are constantly recording downwards as they fly at 20 to 30m over people going about their daily lives, as happened to my friends, who feel indignant outrage about it. The public has no idea what happens to the film footage that is constantly being taken of them. I am now aware that it gets sent back to the USA. This also is an outrageous invasion of people's privacy and basic human rights, especially as the people of Bonython were not asked for their permission or

how they felt about it. There is the potential for such breaches of privacy and human rights to be illegal. This invasion of privacy feels like outright spying.

CASA has changed the usual Regulations that apply to drones to allow these Project Wing drones to fly within 5 m height and 2 m next to a person, without their permission. This also is unacceptable. It is exposing people to danger and is another intrusion on people's basic right to privacy.

The ACT Government has told people it has no responsibility for the trial and has made no avenue of complaint available. (I am aware that 80% of Bonython residents rejected the drone delivery operation.). They told the many people who complained and have been distressed by it that they can complain to Project Wing.

The ACT Government, CASA, Airservices Australia, The Environment Protection Agency and the Federal Government all tell people that they are not responsible for the noise or privacy aspects of the Project Wing Bonython drone trial. This means that the excessively loud noise of the drones is unregulated, and no one is taking responsibility for the serious violation of people's privacy.

I am also concerned about the impact of the above on vulnerable people, such as the elderly and very ill. I believe the ACT Government is irresponsible and acting without integrity towards its constituents, putting money before people. I do not support the operation of drones over people's homes and in close proximity to them. The current regulations and compliance enforcements are inadequate to keep people safe and it is unconscionable to use people as guinea pigs in an experiment in corporate greed for international recognition.

I also believe that the operation of these drones in this manner is setting a precedent for other states and territories. I believe that the drone use is going to become more significant and widespread in the future in all areas of our country for all manner of use and they need proper regulation with consideration of all factors. Especially residents rights to privacy and reasonable noise control.

Thank you for this opportunity to contribute to a significant social issue.

[REDACTED]

22 February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 117

Date Authorised for Publication: 27 February 2019

From: [Luke Fitzgerald](#)
To: [LA Committee - EDT](#)
Subject: Submission
Date: Friday, 22 February 2019 2:38:08 PM
Attachments: [Govt submission.docx](#)

Please find attached my submission to the drone enquiry.

Regards

Louise Fitzgerald



Mr Jeremy Hanson MLA
Chair
Standing Committee on Economic Development and Tourism

Inquiry into Drone Delivery Systems in the ACT

I wish to register my objection to the location of the drone headquarters in Mitchell, ACT. This is due to the adverse impact upon existing residents who will be subject to an incessant high-pitched, unprecedented, aggravating noise as a result of living under, or directly adjacent to, a drone flight path.

I also express disappointment in the approach to community consultation on this issue. Whilst there has been ongoing representation in the media regarding “consultation sessions”, these sessions have transpired to be no more than a one way “information session” at which residents have been told how the drone business is set to operate. At a session where I expressed my wonder and concern about the level of noise the drones would introduce around my home, I was advised by WING of the following arrangements:

- the drones will be multiple in number, and are loud, with a *“hard to describe”* high pitched noise, which would *“definitely be heard inside your house especially if any doors or windows are open”*;
- the propellers on the drones have been reviewed and a proposal to fly at slightly slower speeds (than Bonython) *“should help”* to reduce the noise somewhat;
- the hovering noise *“at no less than a 7-metre drop is also loud, but doesn’t last long”*;
- they are probably not going to fly on Sundays, and will only fly in daylight hours, but *“we’re really not sure what daylight hours are as yet”* (eg pertaining to daylight saving).

When discussing my concern of my home location near Mitchell, I was advised that *“a number”* of drones could potentially be in flight at one time, adding to the noise over certain homes. WING advised that they hope to disperse the drone paths over the suburbs, however with multiple drones in flight, there will be a persistent high-pitched noise over common flight path areas for residents.

As such, I fail to see how this response engenders a consultative approach as it does not acknowledge the noise concern for residents. The WING response has actually heightened my concerns and highlighted the lack of an effective consultative process leading to a Government decision. Having spoken with WING, the noise impact of multiple drone activity upon residents under, or adjacent to a flight path, is my primary objection.

My concerns over an incessant high-pitched noise from a flight path above my home are compounded because I have a husband and son who are night workers, relying on a daytime sleep pattern to get by. In the broader residential setting the noise level of these drones (*which can definitely be heard inside the home*, as advised by WING) is set to present a particularly adverse imposition to shift workers, babies and smaller children, and the aged.

Similarly, there are concerns regarding the effect of this loud, incessant and high-pitched noise upon the health and wellbeing of the general population, including those with mental health conditions in our community. It is possible that any individual may genuinely struggle to deal with the constant high pitch intrusion above and around their home. I am sure we can all relate to that odd random noise that absolutely gets on your nerves. It seems the drone noise, described as “high pitched” at best, is set to be invasive and not conducive to peace, calm or relaxation. As such, this presents a risk to health and wellbeing for all.

My emphasis on noise is because this proposal introduces a unique perturbing noise not otherwise experienced in the community. I noted the Chief Minister’s media comments of late 2018 in which he expressed concern about setting a precedent of limiting drone activity due to the flow on effect of limiting other noises, such as lawnmowers. This is an unreasonable comparison as lawnmowers do not have a high-pitched annoying noise, do not generally operate all day for all or most days of the week; and will not be found in groups flying above your house. Indeed, the concern of setting a precedent for other community noise is not realistic as there is no other community noise which is so pervasive and annoying.

In support of this, I note that the Chamber of Commerce submission recommends that any economic benefits envisaged be weighed up against the community impact. I also note that whilst the *Alpha Beta Advisers* submission addresses benefits for business, consumer and society, it appears silent on the issue of drone noise.

I invite you to listen to the noise of a single drone through the information made available at <https://the-riotact.com/new-no-drones-group-has-gungahlin-trial-in-sights/286007>

Gungahlin residents are yet to be exposed to this noise, as it seems that the consultation process does not include demonstrations of these person sized drones. Suffice to say, there has been reasonable adverse action to the noise from the Bonython trial, and WING have not been convincing in a commitment to acceptable noise reduction.

Given the Government’s high regard to human rights in the ACT and the unique, loud, high-pitched type of irritating noise sought to be imposed, I urge you to consider the effect of this noise pollution on residents and their right to peace and calm inside their home and yard.

Aside from concerns with the unique nature and volume of the noise sought to be imposed I, like many other community members remain concerned with unanswered questions around privacy, storage of data, environmental impact, and critically, an apparent lack of regulation and responsibility for residential drone activity (especially noise) in the ACT. It is of great concern that an unregulated noise can occur in the suburbs and seems at odds with the high regulatory approach otherwise taken by Government for many social activities in the ACT.

That said, there are notable merits relating to economic progress, services to the aged or infirm, and the lesser compelling case of fast food delivery; however I believe there is a moral obligation to balance this against the invasive noise to be inflicted upon residents, especially those under and adjacent to a busy flight path. At the very least, I implore you to consider the mutual benefits for WING and ACT residents if the drone headquarters are located with a greater distance or “buffer zone” from suburbs. This may help absorb the concentration of drones as they are dispatched in flight and dispersed. Accordingly, I submit that Mitchell, or any area so close to residential density is not the appropriate location for this operation.

In closing, I advise that Gungahlin residents have not yet had the opportunity to hear a drone in their area, and it therefore follows that informed community feedback is yet to come, regarding the effect of this loud and irritating noise on people’s right to peace in their home.

Louise Fitzgerald

22 February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 118

Date Authorised for Publication: 27 February 2019



Australian Government
Civil Aviation Safety Authority

OFFICE OF THE CHIEF EXECUTIVE OFFICER

CASA Ref: G118/987

21 February 2019

Mr Jeremy Hanson MLA
Chair
Standing Committee on Economic Development and Tourism
GPO Box 1020
CANBERRA ACT 2601

Email: committees@parliament.act.gov.au

Dear Mr Hanson

Inquiry into Drone Delivery Systems in the ACT

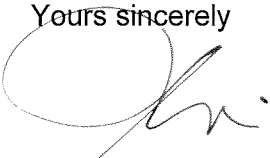
Thank you for your letter of 26 November 2018 inviting the Civil Aviation Safety Authority (CASA) to provide a submission to the inquiry into Drone Delivery Systems in the ACT.

Please find attached CASA's submission for your consideration.

CASA is happy to provide further information at any time and looks forward to being advised of the need to attend any future hearings on this matter.

Please contact Ms Carolyn Hutton, Government and International Relations Branch Manager on 02 6217 1390 or by email at gcr@casa.gov.au if you have any questions.

Yours sincerely


Shane Carmody
Chief Executive Officer and
Director of Aviation Safety

**ACT Legislative Assembly Standing Committee on Economic Development and
Tourism
Inquiry into drone delivery systems in the ACT**

**Submission by the
Civil Aviation Safety Authority**

The Civil Aviation Safety Authority (CASA) makes this submission in response to subparagraph 1(c)(ii) of the Committee's Terms of Reference for the inquiry into drone delivery systems in the ACT, with particular reference to:

the extent of regulatory oversight of drone technology at various levels of government including but not limited to . . . Commonwealth agencies such as Air Services Australia and Civil Aviation Safety Authority.

Please note that CASA is not responsible for drone technology as such, but for the regulation of its safe operation.

CASA's role in aviation safety

CASA's primary function is the safety regulation of civil air operations in Australian territory and the operation of Australian aircraft outside Australian territory. As Australia's civil aviation regulator, CASA deals primarily with the aviation safety aspects of 'drones', or remotely piloted aircraft (RPA) and remotely piloted aircraft systems (RPAS). An RPA (which is an element of a remotely pilot aircraft system) is defined in the *Civil Aviation Safety Regulations 1998* (CASR) as a 'remotely piloted aircraft other than a balloon or a kite'¹.

In the performance of its functions and the exercise of its powers, CASA must have regard to the safety of air navigation as the most important consideration. Subject to that duty, CASA must perform its functions and exercise its powers in a manner that ensures that, as far as practicable, the environment is protected from:

- the effects of the operation and use of the aircraft and
- the effects associated with the operation and use of aircraft.²

In this submission, CASA will not be addressing issues related to security, privacy, insurance, noise, border protection or the importation of goods, as these do not fall within the reach of our statutory functions. For the same reasons, we will not be addressing broader questions involving the social and economic impact of RPA operations; although we certainly recognise that aspects of the RPA-related activities over which we do have regulatory responsibilities can have significant social and economic implications.

The regulatory framework for RPA operations

Australia was one of the first countries in the world to comprehensively regulate RPA with the introduction of CASR Part 101 in 2002.

Part 101 consolidates the rules governing all unmanned aeronautical activities into one body of legislation. It prescribes the rules for the use of unmanned moored balloons and kites, unmanned free balloons, unmanned rockets, RPA, model aircraft and pyrotechnic displays.

¹ Dictionary, Part I.

² *Civil Aviation Act 1988*, section 9A.

Part 101 was substantially amended in 2016 to, amongst other things:

- reflect evolving international regulatory developments and terminology; and
- introduce an 'excluded category' of operations to reduce red tape associated with the commercial operation of smaller, lower risk RPA.

In October 2017, CASA issued a direction on the operation of certain unmanned aircraft to clarify aspects of the existing regulation and to enhance the safety regulation of RPA operations (<https://www.legislation.gov.au/Details/F2017L01370>). This legislative instrument gives directions on the operation of certain unmanned aircraft in the interests of safety, particularly in relation to the operation of unmanned aircraft in the area of emergency operations, near aerodromes and near people not associated with the operation of the aircraft.

On 27 November 2018, the Australian Government's response to the Senate Standing Committee on Rural and Regional Affairs and Transport report: *Regulatory requirements that impact on the safe use of Remotely Piloted Aircraft Systems (RPAS), Unmanned Aerial Systems and associated systems*, was tabled in the Parliament. CASA participated in this Inquiry, part of which included undertaking our own drone safety review (available at: <https://www.casa.gov.au/aircraft/standard-page/drone-safety-review>).

The Government agreed with the Committee's recommendation to develop a whole-of-government approach to RPAS safety in Australia, and to establish appropriate coordination and implementation mechanisms with relevant departments and agencies to implement that policy.

The report also recommended the establishment of a registration scheme for RPA and an education and accreditation scheme for people who fly RPA. The Government agreed with this recommendation and CASA commenced public consultation on such a scheme on 25 January 2019. CASA has received over 3700 submissions as part of this consultation. CASA will make all submissions publicly available on its Consultation Hub unless requested to keep particular submissions confidential. We will also publish a summary of consultation which will summarise all the feedback received.

Once we have fully considered public feedback, CASA is working to a commencement date of 1 July 2019 to implement the first phase in accordance with the Government agreement to implement registration. To minimise risks associated with the supporting information technology systems, a staged implementation is planned as follows:

- 1 July 2019 – RPA operator certificate (ReOC) holders (registration only)
- 1 September 2019 – Excluded RPA operators (Sub 2k and flying over your own land) (accreditation and registration)
- November 2019 – Recreational drone operators (accreditation and registration)

Reporting and Enforcement of Unsafe RPA Operations

CASA has a mechanism to allow reporting of unsafe operations via an "Unsafe Drone Operations" complaint form on its website (<https://www.casa.gov.au/webform/report-unsafe-drone-operations>) which allows anyone to report unsafe and potentially unlawful unmanned aircraft operations. The form makes it clear that CASA is not authorised to investigate or enforce privacy-related matters and that safety breaches may only be investigated where there is sufficient information available to warrant the pursuit of an investigation—including most importantly, information or evidence on the basis of which the identity of the person responsible for the conduct can be identified.

If CASA determines that a breach of the civil aviation legislation has occurred, enforcement action can be taken consistent with the policy reflected in CASA's Enforcement Manual and Regulatory Philosophy. This may include:

- counselling the person involved about their conduct;
- safety-related administrative action to vary or cancel a person's RPA authorisation(s);
- issuing an Aviation Infringement Notice imposing a monetary penalty of up to \$1050 for each offence, depending upon the regulation breached;
- referral of the matter to the Commonwealth Director of Public Prosecutions (CDPP) for criminal prosecution.

Although promising technological advances are being made in this area, it is currently difficult to identify who was responsible for the alleged conduct in most cases, and to obtain sufficient evidence to effectively support enforcement action.

In calendar year 2018 CASA, took the following enforcement actions against commercial and recreational RPA operators:

- 85 counselling letters were issued;
- 7 administrative actions to vary or cancel a person's RPA authorisation were commenced;
- 63 Aviation Infringement Notices were issued;
- 5 briefs of evidence were referred to the CDPP for their consideration with a view to criminal prosecution.

CASA's safety assessments and Specific Operational Risk Assessment

The assessment of the safety of RPA operations is being examined in all leading aviation jurisdictions. CASA is an active member of the Joint Authorities for Rulemaking on Unmanned Systems (JARUS), which is a group of experts from various National Aviation Authorities and regional aviation safety organisations, whose purpose is to recommend a single set of technical, safety and operational requirements for the certification and safe integration of RPA into airspace and at aerodromes. Currently, 57 countries contribute to JARUS, participating across seven working groups. CASA has representatives on working group three on airworthiness, and on working group six on safety and risk management.

JARUS has developed the Specific Operational Risk Assessment (SORA), which provides a methodology for the risk assessment required to support an application to operate an Unmanned Aircraft System (UAS) or RPAS in the Australian context where standard operating conditions may not be applicable or appropriate, often referred to as the Specific category. The SORA utilises a bowtie methodology where any given risk can be evaluated based on multiple contributing factors and mitigations which may be applied both prior to and post the risk event. A version of SORA is available from the JARUS website which can be found at: http://jarus-rpas.org/sites/jarus-rpas.org/files/jar_doc_06_jarus_sora_v1.0.pdf.

However, the most current working version is available to regulators which provides additional and updated information. The methodology is based on the principle of a holistic/total system safety risk-based assessment model used to evaluate the risks related to a given operation. The model considers threats of all kinds for a specified hazard, the relevant design and operational mitigations, and evaluates them systematically to determine the boundaries for a safe operation. This method is applicable to all aspects of the operational system including the aircraft, the control systems, pilots and supporting elements, to determine acceptable risk levels and to validate that those levels are complied with by the proposed operations. It allows evaluation of the intended concept of operations, and subsequent categorisation into six different specific assurance and integrity levels,

which then define the required objectives that must be met in each category for the operation to be considered adequately safe.

This approach allows for the development of a sophisticated and mature risk model to evolve, using both strategic and tactical mitigations which can then be assessed in both a qualitative and quantitative manner. The SORA aims to establish a sufficient level of confidence that a specific operation can be conducted safely.

In July 2017, JARUS released an initial SORA methodology. The application of this methodology has been internationally acknowledged as an acceptable means to evaluate the risks associated with the operation of an RPAS within the specific category and to determine the acceptability of the proposed operation. SORA is now actively in use in the USA, Israel, New Zealand and several European countries.

CASA's current policy position is that this methodology will be applied where the traditional approach to aircraft certification (approving the design, issuing an airworthiness approval and type certificate) may not be appropriate due to an operator/applicant's desire to operate a UAS in a limited or restricted manner. This method may also be used to support activities necessary to determine airworthiness requirements.

CASA's safety assessments of the Wing trial

In September 2017 Google X – Project Wing applied for drone delivery operations in in the semi-rural area of Royalla, on the outskirts of Canberra. CASA assessed the Royalla operation using traditional risk assessment methodologies as the SORA had not yet been formally released. In assessing the application, CASA considered its qualified environmental obligations under section 9A of the Civil Aviation Act. In particular, CASA asked the proponent for copies of independent noise testing and limited hours of operation in line with guidance which can be found in the ACT Government's Noise Thresholds, a current version of which can be found at:

https://www.accesscanberra.act.gov.au/app/answers/detail/a_id/4608/~noise-thresholds.

CASA did not set a noise limit, in decibel levels, as it has no framework by which to consider this issue. CASA is satisfied that it has discharged its obligations under section 9A of the Civil Aviation Act.

Wing commenced commercial delivery operations in July 2017. Drone delivery flights were conducted in Royalla and safety data from these trials were assessed by CASA before approval was given for operations in the Canberra suburb of Bonython.

Wing, through Australian RPA operator certificate holder Unmanned Systems Australia (USA), holds approvals to conduct a drone delivery service in Bonython, issued by CASA in February 2018. Wing was required to submit a safety case to CASA as part of the application process. The safety case included information relating to the reliability of the drones and the results of collision testing verified by an appropriately qualified third-party organisation.

Wing, through USA, hold several instruments issued by CASA to permit operations of the kind presently conducted in Bonython. One instrument, CASA EX82/18 (a copy of which can be found in Appendix A), exempts USA from compliance with CASR 101.245 (1), 101.280 (2), and 101.340 (1)(e). The intent of the exemption is to allow USA to operate closer than 30M of non-consenting people and over populous areas, with certain operational conditions imposed. This instrument remains valid until the end of May 2019.

It is important to note that, as part of those exemptions, Unmanned Systems Australia must comply with a number of operational conditions including not operating during a fire ban or at night, not flying over main arterial roads, not operating less than 5m overhead a person and operating inside the hours of 7am-8pm Monday to Saturday and 8am to 8pm on Sundays and public holidays.

CASA is aware of complaints made by the Federal Member for Canberra on behalf of a number of constituents, and by the Bonython Against Drones group on behalf of its members, most relating to noise. CASA has no accurate information on the actual number of complainants represented by these groups. However, CASA is aware that the operator has elected to modify some of its flight routes in an attempt to minimise the noise impacts. The operator has also introduced new rotors and motors, as well as reducing the maximum speed at which its drones fly, to reduce the noise generated by the RPA.

CASA has worked with both Wing and the ACT Government to ensure there is a robust response plan in place to react to any unforeseen events, including an unplanned drone landing.

CASA engaged with the Environment, Planning and Sustainable Development Directorate of the ACT Government prior to issuing the necessary approvals for the trial. There is no regulatory requirement for CASA to engage with local government in the assessment of applications, however, CASA recognised that the trial was novel and, with that in mind, engaged with local government. CASA was consulted by the ACT Government in the construct of the Government's risk management plan.

How CASA conducts oversight of the trials

In line with CASA's functions under the *Civil Aviation Act 1988*, and our surveillance policies and processes, we conduct industry surveillance of RPA operators, including Wing's operation. In prioritising surveillance of RPA operators, CASA adopts a structured system and risk-based approach to monitor and assess a permission holder's operation and their ability to effectively manage its safety risks.

CASA's surveillance activities encompass the conduct of audits and operational checks to examine, test and verify an operator's organisational systems. This includes the sampling of products and gathering evidence, data, information and intelligence. The scope of a surveillance activity typically focuses on the operator's key organisational systems and functions, including RPA flight operations and practices, personnel training and competency, internal safety management and governance and administrative functions. The various surveillance activities and subsequent information gathered during surveillance events allows CASA to ascertain whether all RPA activities conducted by the RPA operator are as safe as reasonably practicable.

The last surveillance event of Wing's operations took place in early October 2018. There were no adverse safety findings that would cause CASA to cancel or limit USA's existing operational approvals.

As part of the regulatory conditions imposed on Wing, they are required to provide monthly reports to CASA that detail operational information about flights conducted as part of the trial. Wing are also bound by the *Transport Safety Investigation Act 2003* and *Transport Safety Investigation Regulations 2003* to report certain incidents and accidents to the Australian Transport Safety Bureau.

To date, CASA has not received any reports of RPA accidents in the course of the Wing trial. CASA is aware of 2 occasions when RPAs were landed in a green space as a safety

precaution, under control of the remote pilot. There were no reported injuries or property damage. The landing and aircraft recovery were conducted in accordance with Wing's documented procedures. A root-cause analysis was conducted by Wing and an update to the software on the RPA fleet was carried out to prevent a recurrence. Since the software update was implemented, no precautionary landings have been reported. CASA is aware of other reports in the media, such as the delivery of coffee to an incorrect location, but CASA has not received a formal complaint or actionable information on such alleged occurrences.

Next steps

Consultation was completed in late 2018 on a Part 101 Manual of Standards (MOS) to support Part 101. The MOS is due to be made in the first half of 2019. Amongst other things, the MOS will introduce:

- a standardised syllabus of training for prospective new remote pilot licence (RePL) holders that will improve safety through improved knowledge, practical competency standards and professionalism within the commercial RPAS sector;
- standardised requirements governing the ways in which certain RPA activities may be performed, compliance with which would permit those activities to be performed without a general CASA permission being required;
- requirements for certified RPAS operators to maintain certain records, facilitating CASA's safety-related auditing function;
- standardised requirements for the safe operation of RPA in the vicinity of aerodromes and landing sites;
- enhancements to the remote pilot licensing structure to accommodate new technology; and
- improvements to requirements governing Remote Pilot Licence (RePL) theory examinations and RePL practical flight tests

On 8 November 2018 Wing applied to CASA to relocate the base of operation to an industrial location in Mitchell, with a view to providing initial delivery services to the adjacent residential suburbs. CASA is conducting an extensive safety assessment of this application, including lessons from the Bonython trial, looking in detail at any safety risks to which it is reasonable to expect that people on the ground or other airspace users might be. CASA does not currently consider the effects of noise from RPAS to be a significant safety risk and hence does not assess noise within its risk framework.

Appendix A: Instrument Number CASA EX82/18



Australian Government **Civil Aviation Safety Authority**

Instrument number CASA EX82/18

I, SHANE PATRICK CARMODY, Director of Aviation Safety, on behalf of CASA, make this instrument under regulations 11.160 and 11.205 of the *Civil Aviation Safety Regulations 1998*.

Shane Carmody
Director of Aviation Safety

29 June 2018

CASA EX82/18 — Remotely Piloted Aircraft Operation Over Bonython (Unmanned Systems Australia Pty Ltd) Exemption 2018

1 Name

This instrument is *CASA EX82/18 — Remotely Piloted Aircraft Operation Over Bonython (Unmanned Systems Australia Pty Ltd) Exemption 2018*.

2 Definitions

Note In this instrument certain terms and expressions have the same meaning as they have in the *Civil Aviation Act 1988* and the regulations, including: *remote pilot licence, RPA*.

In this instrument:

Bonython means the Canberra suburb of Bonython approved by CASA under paragraph 101.030 (1) (a) of CASR as an area for the operation of the relevant aircraft by Unmanned Systems Australia.

Note For the CASA approved operating area of Bonython — see Instrument Number RPAS2018-1746.

chief remote pilot means a person performing the functions and duties mentioned in regulation 101.342 of CASR.

documented practices and procedures has the same meaning as in paragraph 101.335 (1) (d) of CASR.

intended, in relation to a recovery site, means a site intended by Unmanned Systems Australia to be used for the recovery of a relevant aircraft.

operator remote pilot means a holder of a remote pilot licence who is an employee of Unmanned Systems Australia.

Project Wing flight manual means *Unmanned Systems Australia Pty Ltd RPAS Operational Procedures*, dated 2018, version 6.

relevant aircraft means a Hummingbird V2.0 Powered Lift Unmanned Aerial Vehicle operated by Unmanned Systems Australia under its certification as an RPA operator.

Note A person who was certified as a UAV operator as at 28 September 2016 is taken to have been certified as an RPA operator — see subregulation 202.462 (3) of CASR.

remote pilot station means the laptop, control unit and avionic interfaces;

- (a) approved by CASA as a remote pilot station; and
- (b) used to control and command a relevant aircraft.

trial means the Google Project Wing research and development activity for the Google Project Wing “Drone delivery” program that is limited to the operation of relevant aircraft in connection with the delivery of goods to persons who have:

- (a) applied in writing to Unmanned Systems Australia to become a trial participant; and
- (b) been approved by Unmanned Systems Australia as a trial participant; and
- (c) requested a specific delivery via the Google smart phone application to a pre-approved delivery location located within Bonython.

Unmanned Systems Australia means Unmanned Systems Australia Pty Ltd, ARN 827475.

3 Application

This instrument applies in relation to Unmanned Systems Australia if it operates a relevant aircraft in or over Bonython for the purposes of the trial.

4 Exemption — operating near people

- (1) The following persons, while operating a relevant aircraft in or over Bonython, are exempt from compliance with subregulation 101.245 (1) of CASR to the extent that the subregulation requires that a person must not operate a relevant aircraft within 30 metres of a person who is not directly associated with the operation of the relevant aircraft:
 - (a) Unmanned Systems Australia;
 - (b) the operator remote pilot of the relevant aircraft.

Note A person who was certified as a UAV controller as at 28 September 2016 is taken to have been granted a remote pilot licence under regulation 101.295 of CASR — see regulation 202.461 (3) of CASR.

- (2) The exemption is subject to the conditions that apply to the person that are mentioned in sections 7 and 8.

5 Exemption — operating over populous areas

- (1) The following persons, while operating a relevant aircraft over Bonython, are exempt from compliance with subregulation 101.280 (2) of CASR to the extent that the subregulation requires that a person must not operate a relevant aircraft at a height less than the height from which, if any of its components fails, it would be able to clear the area:
 - (a) Unmanned Systems Australia;
 - (b) the operator remote pilot of the relevant aircraft.
- (2) The exemption is subject to the conditions that apply to the person that are mentioned in sections 7 and 8.

6 Exemption — compliance with documented practices and procedures

- (1) Unmanned Systems Australia is exempt from paragraph 101.340 (1) (e) of CASR to the extent that the paragraph requires Unmanned Systems Australia to comply with a requirement of its documented practices and procedures that is inconsistent with a requirement under this instrument.

Note CASA considers that the Unmanned Systems Australia documented practices and procedures include at least the Project Wing flight manual and the *Unmanned Systems Australia Pty Ltd Operations Manual*, dated 6 April 2018, version 6.

- (2) The exemption in subsection (1) is subject to the condition mentioned in paragraph 8 (1) (b).
- (3) An operator remote pilot is exempt from regulation 101.370 of CASR to the extent that the paragraph requires the operator remote pilot to comply with a requirement of the documented practices and procedures of Unmanned Systems Australia that is inconsistent with a requirement under this instrument.
- (4) The exemption in subsection (3) is subject to the condition that the operator remote pilot notify the Unmanned Systems Australia chief remote pilot in writing of the inconsistency, within 1 business day of becoming aware of the inconsistency.

7 Operational conditions

- (1) Unmanned Systems Australia and the operator remote pilot must ensure that:
 - (a) the relevant aircraft is not operated in or over Bonython when a total fire ban is in place; and
 - (b) the relevant aircraft is equipped and operated with an active fail-safe mode that will ensure that, in the event of a data-link loss, the aircraft will land or otherwise terminate the flight in accordance with the procedures mentioned in the Project Wing flight manual; and
 - (c) any site from which the relevant aircraft is launched, or intended to be recovered, must not be located within 15 metres of a sealed road, and any launch or recovery operation for the relevant aircraft must not pose an unreasonable level of distraction to motorists; and
 - (d) the relevant aircraft is not operated:
 - (i) more than 400 feet above ground level; or
 - (ii) at night; or
 - (ii) outside public gatherings; or
 - (iii) over Athllon Drive, Drakeford Drive or Woodcock Drive; or
 - (iv) less than 5 metres overhead a person, or 2 metres horizontal distance from a person; or
 - (v) within 3 nautical miles of the boundary of Canberra airport plus a reasonable operational buffer to avoid any unintended incursion into that airspace.
- (2) Unmanned Systems Australia must not use a launch and intended recovery site unless the location of the site has been notified to CASA in writing.

- (3) Unmanned Systems Australia and the operator remote pilot must not operate a relevant aircraft in or over Bonython outside the hours of:
 - (a) 7:00am to 8:00pm Monday to Saturday; and
 - (b) 8:00am to 8:00pm Sunday and public holidays.

Note Under ACT legislation, there are ACT government restrictions relating to suburban noise that may also apply to Unmanned Systems Australia.

- (4) Unmanned Systems Australia must not, at a particular time, operate more than 15 aircraft in or over Bonython from each remote pilot station.

8 Regulatory conditions

- (1) In the event of an inconsistency between the documented practices and procedures of Unmanned Systems Australia and this instrument, Unmanned Systems Australia must:
 - (a) comply with this instrument to the extent of the inconsistency; and
 - (b) notify CASA in writing of the inconsistency, within 2 business days of becoming aware of the inconsistency.
- (2) Unmanned Systems Australia must, within 30 days of the end of each calendar month during which this instrument is in force, provide CASA with a report that contains the information mentioned in subsection (3) in relation to operations for the trial during the month.
- (3) For subsection (2), the information is the following:
 - (a) total number of flights conducted for the trial;
 - (b) total number of flights which were deliveries for the trial;
 - (c) total hours of operation for the trial;
 - (d) number of incidents;
 - (e) number of accidents;
 - (f) in relation to each incident and accident:
 - (i) a description, analysis of causal factors, corrective actions identified, and the extent to which corrective actions have been implemented; and
 - (ii) if a relevant aircraft was recovered from a site other than an intended recovery site notified to CASA, the location of the recovery site.
- (4) Unmanned Systems Australia must not amend its documented practices and procedures, or implement a change to the procedures mentioned in paragraph 7 (1) (b), unless the change has been approved in writing by CASA.

Note A change to the matters mentioned in this subsection will result in the reissue of this instrument to give effect to the amended matters.

9 Repeal

This instrument is repealed at the end of 31 May 2019.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 119

Date Authorised for Publication: 27 February 2019

From: [REDACTED]
To: [LA Committee - EDT](#)
Subject: Inquiry into drone delivery systems in the ACT
Date: Friday, 22 February 2019 2:45:08 PM

To: The Standing Committee on Economic Development and Tourism

Re: Inquiry into drone delivery systems in the ACT

From: [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

MAY I PLEASE REMAIN ANONYMOUS

I would like to reiterate the same concerns of others in relation to drone delivery systems in the ACT in relation to:

- noise levels
- concerns about wildlife
- disruptions to the neighbourhood
- privacy issues

I can see the benefits of medical deliveries, lower emissions / less traffic, etc. I can also see some work has been done on promoting the positive benefits of drones (the Alpha Beta paper). I also believe in the positive progress of technology. However, let's put technology aside and think about the simple fact that most people would prefer to be seeing and hearing birds flying around the neighbourhood in Canberra not drones.

Let's retain some old fashioned peace and quiet where we can sit in the privacy of our back yards after a long working week, or in our retirement, and enjoy the sounds of nature, in a place which is meant to be our safe haven away from life's continual technological buzzing, beeping and ringing.

Let's also think about the wildlife. No amount of written reports can predict what birds and other animals may do when they are faced with fear and something unfamiliar. Let's not invade their natural habitats any further.

Thank you,
[REDACTED]

MAY I PLEASE REMAIN ANONYMOUS



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

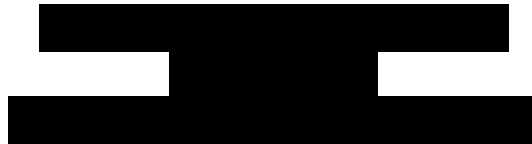
Submission Number: 120

Date Authorised for Publication: 27 February 2019

**Standing Committee on Economic Development and Tourism
Submission**

Inquiry into drone delivery systems in the ACT

Margaret Smythe



Terms of Reference

- 1) the decision to base the trials of the technology in the ACT and surrounding region
- 2) the economic impact of drone delivery technology in the ACT
 - (I) investment that has been brought into the Territory
 - (II) number of jobs created as part of the trial
 - (III) extent of collaboration with local industry and academic institutions
- 3) the extent of regulatory oversight of drone technology at various levels of government including but not limited to:
 - (I) Local authorities such as EPA, Worksafe, Access Canberra
 - (II) Commonwealth agencies such as Air Services Australia and Civil Aviation Safety Authority
- 4) the extent of any environmental impact as a result of trialling drone delivery technology on:
 - (I) the residents within the trial area
 - (II) native wildlife
 - (III) domestic animals
 - (IV) greenhouse gas emissions
- 5) ways to improve the use of drone delivery technology within the ACT
- 6) any other relevant matter
- 7) information privacy

1) The Decision to Base the Trials in ACT and Surrounding Region

I believe this is an unnecessary and unwarranted trial that should not be based in the ACT. There has been little or no discussion regarding what benefits if any there are to being the first to trial commercial drone delivery.

There may well be some benefits to the use of drones but my knowledge of this trial seems to be that it is for frivolous purposes (coffee delivery). My understanding is that the initial trial activity in the ACT was not well received, and its extension further afield in the region does not appear to have taken initial comment into account.

I consider that considerable trialling needs to be done in non-suburban areas before even contemplating the Canberra regions proposed.

I hesitate to sound like a NIMBY, but Canberrans enjoy one of the most liveable environments possible: we value a peaceful quiet environment and vibrant wildlife which may be jeopardised by this trial.

I am also concerned about the lack of objective and independent monitoring and evaluation of this trial.

2) The Economic Impact of Drone Delivery Technology being tested in the ACT including the investment brought in to the Territory, the number of jobs created as part of the trial, the extent of collaboration with local industry and academic institutions

The number of jobs created is likely to be insignificant, and if the trial was successful in enabling a large scale delivery system there would be fewer employed in standard delivery activities.

3) The Extent of Regulatory Oversight of Drone Technology at Various Levels of Government

I understand that this is an area that needs considerable work prior to any further trialling. I gather there are gaps regarding regulatory areas including environmental (including noise), occupational health and safety and privacy that leave the population exposed to a raft of negative effects. I also understand that air-space safety and regulatory agencies are still catching up and considerably more work needs to be done in these areas.

4) The Extent of any Environmental Impact as a Result of Trialling Drone Delivery Technology

I understand that Bonython residents petitioned for a ban of drone technology on the grounds of intolerable disruption and noise.

Have any independent studies been done on the likely environmental impact in suburban Canberra, which is known for its abundant wildlife?

One can speculate that the noise and the sight of drones is likely to have a negative impact on wildlife and pets alike; what actual evidence is being referred to?

6) Any Other Relevant Matter

I am concerned that the frivolous nature of the trial (coffee delivery) is a sad indictment on modern life. At a time when we are seeing major rises in obesity and sedentary lifestyles resulting in increased health issues; as well as evidence of mental health problems related to loneliness and lack of human contact; that our government puts effort into such a ridiculous and unneeded activity rather than encouraging far more healthy and useful lifestyle choices just beggars belief. Why not encourage neighbourliness and local business by exhorting people to walk or cycle to their local café for a coffee; or check in on their neighbours and offer to pick up medication or urgent supplies?

7) Information Privacy

I am concerned that there are no (or inadequate) regulations to protect the privacy of the public against sale and sharing of information gained via drones and drone delivery data.



LEGISLATIVE ASSEMBLY
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Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 121

Date Authorised for Publication: 27 February 2019

From: [Peter Channells](#)
To: [LA Committee - EDT](#)
Subject: Drones
Date: Thursday, 21 February 2019 11:15:28 PM

To whom it may concern

We are one of the merchants providing products to Wing during their trial of drone product delivery out of Bonython. For us the trial was a success by engaging with sections of the community we don't normally see.

More broadly speaking, food and product delivery is already utilised widely in the community including Cole's/Woolworths, fast food, Uber etc. Drone technology is far more cost effective and environmentally friendly than all road based systems.

Is it the way of the future? History is full of examples where new technology has been resisted "it will never work". The extended drone delivery program out of Mitchell is an opportunity for Canberra to further demonstrate leadership and willingness to embrace the future.

There is no clear right or wrong answer here but it is up to your committee to decide how you want to be remembered and judged by the future.

Kind regards

Peter Channells
Jasper and Myrtle



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 122

Date Authorised for Publication: 27 February 2019

Submission Cover Sheet

Enquiry: Drone Delivery Systems in the ACT

Committee: The Standing Committee on Economic Development and Tourism

Author:

Andrea Wild

[REDACTED]
[REDACTED]
[REDACTED]

I am a resident of Palmerston, ACT, one of the suburbs that would be impacted by the proposed introduction of a permanent drone delivery service based in Mitchell.

Media coverage of the proposed service notes several arguments in favour of the drone delivery: drones are fun, drone delivery would create jobs and takeaway food delivery by drone is convenient for residents. I disagree.

While delivery drones may be fun for those who fly them, evidence presented by residents living in the suburb of Bonython, location of the ACT's 2018 drone delivery trial, shows that residents find the noise created by delivery drones overwhelmingly unpleasant and intrusive. This is especially so for residents close to drone flight paths.

A drone delivery service will not create jobs, it will shift them from one service provider to another, such as from a bicycle delivery rider or person serving customers at a counter, to a drone flyer. This so-called jobs creation in the ACT is a zero sum game.

While having takeaway food delivered to homes by drones may be marketed as 'convenient', what it actually delivers is easier access to unhealthy food. With more than half of the ACT population overweight or obese and heart disease – one of our biggest killers – driven largely by poor quality diets, what we need is convenient access to farmers markets, not burritos. As well as delivering an excess of fat, salt, sugar and calories, a drone delivery service may also increase social isolation in our community by reducing person to person interactions, such as those that occur opportunistically when people walk to their local supermarket, or even a takeaway. A healthy city is one that encourages walking and social interaction.

Another argument in favour of drone delivery suggests that drones may assist elderly or disabled people in the future. I note there appears to be no plan for how or when this might occur. When searching for arguments for or against drones, we do not have to look far for evidence of drones being used for much less noble purposes, such as drone strikes in Syria. I encourage the Committee to focus on the evidence of what an ACT drone delivery service would actually be used for rather than considering cherry-picked arguments that paint drone delivery in its most favourable, but least probable, light.

If drones become a commonplace and unremarkable feature of our suburbs, where could this lead? Would we lose the privacy of our backyards as cameras fly overhead? Would organised crime groups use drone-assisted spying and surveillance to plan and carry out burglaries of suburban houses?

Has the ACT Government conducted an assessment of the impact of drones on wildlife in Gungahlin, particularly birds in ecologically sensitive areas? The proposed drone delivery service area in Gungahlin borders the Ginninderra Creek corridor and includes two wetlands, Gungahlin Valley Ponds in The Valley Ave and Patrick White Pond in Franklin. All of these areas support large waterbird populations, ranging from ducks to pelicans. Other natural areas in this area of Gungahlin are also used by birds, including the Mulanggari Grasslands Nature Reserve and the North Mitchell Grasslands. Our suburban gardens and local green spaces such as along bike paths are filled with native bird species, from magpies and ravens to lorikeets and cockatoos. I refer the committee to Wallace et al 2018 (see References) for an analysis in the New Zealand context of the lack of regulation of drones with respect to impacts on wildlife.

Would drones continue to operate after dark? From early evening during October to April, our suburbs are used by fruit bats, who camp at Commonwealth Park during the day and fly out at dusk to feed on blossoming gums and fruit trees such as figs and plums in suburban gardens. Suburban

pets, such as dogs, may become distressed by the noise and sight of drones, as during fireworks but much more frequently. Drones may create wellbeing issues for pets and noise issues for neighbours due to dogs barking.

Has the ACT Government conducted a study of drone safety to people, especially children? While delivery vehicles such as bikes and cars do cause accidents, these incidents occur on roads, which is a location I can easily keep my children away from. What happens if a drone crashes due to failing or colliding with something while flying over my front yard, a playground or a green space where my children are playing? Will drones be restricted to flying only above existing roads?

I implore the ACT Government to delay the introduction of drone delivery services in the ACT pending a review of their safety to people and wildlife and their impacts on human wellbeing in suburbs. If satisfied, drone delivery services should not be permitted to operate until a mandatory regulatory framework is in place governing their operation.

Andrea Wild

[REDACTED]

Reference

Pip Wallace, Ross Martin & Iain White (2018) Keeping pace with technology: drones, disturbance and policy deficiency, *Journal of Environmental Planning and Management*, 61:7, 1271-1288, DOI: 10.1080/09640568.2017.1353957



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 123

Date Authorised for Publication: 27 February 2019



Robyn Coghlan

Standing Committee on Economic Development and Tourism,
ACT Legislative Assembly

By email: LACommitteeEDT@parliament.act.gov.au

Inquiry into drone delivery systems in the ACT

I wish to comment on this matter as a resident who has not been subjected to drones in my neighbourhood but is sympathetic to the complaints of Bonython residents who have endured the recent trial. Living between two properties with neurotic dogs who bark non-stop whenever anyone is in our backyard makes me sympathetic to the complaints of those who have experienced distressing noises in their neighbourhood. I also have concerns about safety and privacy.

I have experienced a drone on one occasion at Lake Burley Griffin – a small drone taking photographs in a public space at some distance from people which was not disturbing in any way. My home is regularly, but not frequently, overflown by small aircraft and helicopters which are not disruptive, possibly because of the deep noise and great height.

I shall respond according to the terms of reference.

(a) the decision to base the trials of the technology in the ACT and surrounding region;

The decision to accept the private industry proposal to base trials of drones in the ACT was, according to the Canberra Times of 27 Nov 2018, in spite of warnings from the EPSDD mentioning that some of the risks were unknowable, that the high-pitched buzzing noise could annoy some residents and that pets, native animals and residents could be startled by unexpected overhead flights, as well as being an invasion of privacy, along with the potential to distract drivers and cyclists. The article does not elaborate on the reasons CASA chose to allow the trial. It might have been under pressure to do so, justified by the thought that a trial would confirm any issues that could arise.

Usually, people who participate in trials have agreed to do so. In this case, a select group of Bonython residents had signed up for a special Android/iOS app that would allow home delivery but it is not clear that nearby residents were asked if they agreed to the trial. The rights of these residents might, therefore, have been overridden by the bureaucracy.

Another significant fact is that drones are not envisaged under the planning rules which means that neither the overall city layout nor individual home blocks have been designed to accommodate drones. Town planning includes land use zones to separate nuisance activities from residential and ordinary commercial zones. Accordingly, nuisance activities are only

allowed in industrial areas such as Fyshwick and Mitchell, both of which would be satisfactory for drones.

(b) the economic impact of drone delivery technology being tested in the ACT;

There are many activities that could operate in the ACT and bring great financial benefit but are not permitted because they are undesirable for one reason or another. The illicit drug trade flourishes regardless of efforts to control it but the investment it could bring to the Territory and the number of part-time casual jobs already created are not considered in deciding whether it should be permitted. Likewise, potential investment and employment opportunities are not considered in determining whether other activities should be permitted or banned. While a good thing when they happen, potential income and jobs should not be considered when deciding whether permission should be given for drones which can affect residents' enjoyment of their property.

(c) the extent of regulatory oversight of drone technology at various levels of government including but not limited to:

I note the Australian Government's acceptance in November 2018 of only two (2 & 10) of the ten recommendations from the Senate Inquiry into Drones while agreeing in principle with another four. Those specifically relevant to operation of drones in urban ACT are:

- 1: Immediate reform of the current regulations which do not adequately cover small drones under 2kg despite being quite capable of causing considerable damage to rotorcraft and aircraft;
- 2: Mandatory registration of drone users and requirement to undertake mandatory education and training so all operators understand the rules which will ultimately reduce the risks to public safety;
- 4: Australian Federal Police and other relevant authorities to prohibit the use of remotely piloted aircraft systems in the airspace above significant public buildings, critical infrastructure and other vulnerable areas.
- 5: Development of drones-specific airworthiness standards, including mandated 'fail-safe' functions;
- 10: Creation of a nation-wide enforcement regime, including powers to issue on-the-spot-fines and report infringements.

The ACT Government should ensure the federal provisions cover these issues adequately and, where they do not, pass ACT legislation to fill the gap. In this respect, I note that the Integrated Transport Strategy Executive Summary on page 8 declares under the heading "Future-ready Canberra":

CMTEDD to work with TCCS, EPSDD and CASA to review and update regulation, where appropriate, to allow the continued trial and expansion of delivery drones as a service.

It is to be hoped that this process will be carried out with a primary aim to maintain safe and pleasant urban areas, rather than with an emphasis on legitimising commercial ambitions on the basis that the ACT government's progressive approach and commitment to innovation justify it.

In Australia, the common law does not defend individual privacy against direct invasion. As a safety regulator, CASA has no remit in the matter of noise or questions of privacy. At present, an affected resident can complain to the Office of the Australian Information Commissioner (OAIO) but must have previously given 30 days' notice to the drone operator. This is unsatisfactory. It is essential that an ACT Government agency have authority to

investigate and make decisions on noise and privacy concerns without the affected resident necessarily having to resort to OAIO in the first instance.

(d) the extent of any environmental impact as a result of trialling drone delivery technology;

Most drones used in the ACT to date have been small ones either for recreational use or for photography. Delivery drones are much larger at 4.5 kg. This means greater visual intrusion and larger, noisier motors.

(i) It is apparent that residents adjacent to a property that has signed up for deliveries by drones will be affected more than other residents who do not have that experience. The greater the number of drone deliveries occurring in an area, the worse the impact will be with inevitable adverse effects on neighbourly relations. Even if the noise effect can be attenuated, there is potential for the sheer number of drone flights to become, in itself, a major nuisance/hazard, as acceptance of this form of transport increases.

(iii) My experience of the neurotic dogs on either side of my property leads me to conclude that they would go berserk at the sight or sound of a drone. Over the past two years, they have not got used to any presence in our backyard, so I cannot see why they would become accustomed to drones over time. We have lived here since 1973 and neighbours have had dogs over that time without any problems until recently. If the ACT Government cannot control the breeding of dogs in Canberra, then there is little likelihood it would be able to control drone operations once established.

(iv) The claim that drones would reduce greenhouse gas emissions by removing the need for fewer car trips is spurious as cars are gradually becoming electric as the technology improves. Further, items for delivery still have to be obtained and delivered to the drone base before they can be shipped to the purchaser. This adds an extra road journey to the process to replace that of the customer driving to the shop. In addition, the convenience of having a drone deliver some item that has been forgotten in the weekly shopping trip will inevitably produce a certain mental laziness that will then result in even more drone deliveries than anticipated.

(g) information privacy;

The sophisticated guidance systems used by drones supposedly cannot be taken over by malign outsiders. This is an optimistic stance given recent hacking of Federal Government information systems. Again, protecting the interests of the individual should be supreme.

Conclusion

At this point in time and state of technology, drone use should be restricted until further information is available on physical and privacy risks, and associated legislation put in place to protect the ordinary citizen. While drones can do many things, in a congested area such as most urban precincts, their operation should be limited to essential services such as delivery of medicines and blood plasma to people who are restricted in their mobility for one reason or another. Ideally, drones over 2 kg should be restricted to industrial areas and banned from residential and commercial zones. The number of authorised drone operators for delivery purposes should be limited to reduce conflict between drones in flight.



Robyn Coghlan

22 Feb 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 124

Date Authorised for Publication: 27 February 2019



Introduction

Wing welcomes the opportunity to provide a written submission to the Standing Committee on Economic Development and Tourism in relation to its inquiry into drone delivery systems in the ACT.

The terms of reference for the inquiry identifies a number of important issues about drones, drone delivery systems and recent trials. These include safety, noise, privacy, wildlife, and impacts on local business. Wing has continually considered these issues over the past six years during the development of its technology and operations.

Summary

Drones promise vast potential benefits for consumers, businesses and society. Airborne delivery is safer than ground-based delivery. Zero-emission drone flights produce a fraction of the air pollution generated by deliveries on the ground, and help to alleviate traffic congestion. Drone delivery can also significantly expand the reach and reduce the costs of local businesses while increasing convenience to customers. Research commissioned by Wing estimates that at scale, drone delivery could add \$30 to \$40 million in additional annual revenue for ACT businesses alone, and a reduction of delivery costs for businesses by \$12 million per year by 2030.¹ However, that potential can only be realised if drone technology, and its various applications, are better understood and utilised.

Why Australia?

Wing has been testing drone delivery in Australia since 2014, and has conducted three trials in and around Canberra in that time. Wing is also working in North America, and Europe to further test and refine drone delivery, but Australia has an interested consumer population, a talented and experienced unmanned aviation workforce, and enthusiastic and innovative business and government partners. Wing considers that the Civil Aviation Safety Authority (CASA) is one of the most safety-conscious, innovative aviation regulators in the world. For all of those reasons, Australia, and the ACT in particular, has staked out a leadership position in the advancement of drone technology that has captured global attention, and we believe that is why some of the most significant drone developments in the world are happening here.

¹ AlphaBeta Economics “Faster, Greener and Less Expensive; The Potential Impact of Delivery Drones in the Australian Capital Territory”

Canberra

Wing has invested over \$5 million into the ACT through its trials, with that investment directed to supporting Canberra-based businesses. That investment will increase significantly upon commencing operations from a permanent location in Mitchell.

Over the past 18 months, Wing has delivered food, small household items and over-the-counter pharmaceuticals more than 3,000 times to homes in the Fernleigh Park, Royalla, and Bonython communities. In Bonython, Wing supported 164 selected customers (testers) who each ordered an average of 13 times by drone, with 50 percent ordering at least once per month. 47 percent of orders placed were with local ACT businesses, and the balance placed with national Australian businesses with ACT locations or franchises.

International media, other Australian states and territories, and countries from across the globe have paid close attention to the ACT trial; being among the most advanced drone trials in the world. During the span of the trial in Bonython, aviation regulators from nine countries visited Wing's site to observe the trial firsthand. The trials have raised Canberra's profile globally, and our planned facility in Mitchell will further enhance Canberra's reputation as one of the leaders in the innovation and technology space. This profile has the potential to further attract innovative start-up companies to Canberra, and places Canberra on the map as an advanced forward-thinking city.

Wing intends to establish a permanent warehouse in Mitchell to accommodate longer-term commercial operations that would initially service households in the surrounding suburbs of Franklin, Crace, Palmerston, Harrison and Gungahlin.

Wing is committed to continuing to work with Commonwealth and ACT regulators to ensure the safe integration of unmanned aircraft into the airspace, and to work closely with communities to manage and reduce any associated impacts. Wing strongly believes that by working together with regulators and communities, we can improve access to services, open up new economic opportunities, and better connect our cities.

About Wing

Wing, a subsidiary of Alphabet, has worked since 2012 on the development of a lightweight aircraft and a navigational system that can safely deliver small packages to specific destinations on request. We've conducted tens of thousands of test flights to refine our technology and verify its safety and reliability.

Wing drones are custom-designed to deliver packages safely, reliably and efficiently. Wing's Unmanned Aircraft Traffic Management (UTM) system helps drones to navigate the skies safely, avoiding all obstacles. It can also help regulators, law enforcement agencies and other drone operators to manage and enforce rules and regulations for unmanned aircraft.

Drone delivery has the potential to radically improve the way we live by making the things we need in a hurry available in just minutes. Drone delivery is safe, fast, green and affordable, with the potential to improve the way our cities operate by reducing road congestion and creating new economic opportunities for local businesses.

How Wing delivery works

Wing has designed a drone that can pick up a package, fly to a designated site, hover over the delivery area, and gently lower the package to the ground at a precise location chosen by the person who scheduled the delivery (such as a backyard or near a doorstep). Our drones map the safest route to a designated location using our UTM system. The UTM plans a flight path from take-off to landing, avoiding other Wing drones and obstacles.

- 1. Order.** The customer orders goods from a merchant via the Wing mobile app. Goods can include meals, beverages, over-the-counter pharmaceuticals and other essential goods. After receiving an order, the merchant packs the goods in a specialised package and requests that Wing send a drone to pick-up the package.
- 2. Flight Planning.** Wing software automatically calculates the route from the launch site to the customer, taking into account safety and regulatory restrictions. The flight plan is then uploaded to the drone.
- 3. Package Pick Up.** The drone launches automatically and proceeds to the merchant pick up area, then hovers at a safe height above ground (7m) while the merchant connects the package to an extendable tether beneath the drone.
- 4. Delivery.** The drone climbs to cruise height and commences forward flight. At the customer destination, the drone enters hover and descends to delivery height 7m above ground. The drone lowers the tether and automatically releases the package containing the ordered merchandise.
- 5. Recovery.** The drone climbs back to cruise height and returns to the Wing site. At the Wing site, the drone lands automatically on a charging pad to prepare for the next delivery.

In Bonython, the average duration of a drone delivery (from the tester placing an order to receipt of goods) was 7 minutes and 36 seconds (comprising approximately ~4 minutes of merchant prep and ~3 minutes of flight time).

What is the economic impact of drone delivery on ACT local businesses?

For our trial in Bonython, Wing partnered with a range of ACT small businesses and national Australian chains to deliver food and household items to Bonython residents. *There is more*

information regarding our merchant partners in the “Summary of Trial” section of this submission below.

Wing commissioned research from the firm AlphaBeta Economics to better understand the potential impacts of drone delivery in ACT.

AlphaBeta found that drone delivery could generate an additional 600,000 annual retail transactions in the ACT in 2030, worth around \$30 to \$40 million in revenue. This benefit could be as high as \$12,000 to \$16,000 per relevant retail business per year. There are two reasons for these outcomes:

1. **Expanding market reach for businesses.** Drone delivery allows businesses to offer delivery in 5-7 minutes, for what would have been same-hour, or even same-day or same-week delivery by road. Today, restaurants have an average delivery range of 5km due to traffic and food insulation constraints. Drone delivery with Wing can increase that range to 10km, bringing an additional 50,000 households into range.
2. **Reducing delivery cost for businesses.** For many small businesses, delivery services by road are expensive and prohibitive. For restaurants, delivery costs are at least 30 percent of the order value. Drone delivery will be 90 percent less expensive than existing delivery methods, saving ACT businesses \$12 million per year by 2030.

What is the impact of drone delivery on the environment?

Wing supports the ACT's target of reducing greenhouse gas emissions to 40 percent below 1990 levels by 2020 and achieving net zero emissions by 2045. Drone delivery can significantly reduce carbon emissions caused by traditional delivery methods. AlphaBeta found that small drone delivery produces 99 percent less emissions than deliveries made by car. AlphaBeta also found that if even a small proportion of deliveries and pickups by car and truck are shifted to drones, congestion in the ACT could be reduced by 35 million vehicle kilometres per year by 2030, which would result in the reduction of 8,000 tonnes of greenhouse gas emissions. Because 69 percent of ACT emissions derive from vehicles (versus 16 percent nationally) drone delivery has the potential to play an important role in reducing carbon emissions in Canberra.

In addition, the potential reduction in vehicle kilometers could avoid up to 70 road accidents annually in the ACT. Besides less traffic, drone delivery has the potential to offer greater autonomy to the 13,000 disabled and 6,700 elderly people living in the ACT who may need assistance with mobility. We believe our technology will help make Canberra a far more accessible and convenient place to live.

Interaction with local industry groups and academic institutions

Wing is committed to studying the impact of drones. We are exploring partnerships with the Canberra Institute of Technology, and have held preliminary conversations with representatives from the University of New South Wales Canberra, as well as with the Australian National University.

Wing welcomes schools and academic institutions to our new delivery operations in Mitchell (upon commencement) to learn more about STEM, aviation, drone technology, and other areas within our expertise. During the trial in Canberra, our diverse team of engineers, pilots and team members visited schools across Canberra, hosted Scouts groups, and spoke at the Questacon Invention Convention. The majority of Wing's engineering team were passionate about aviation and technology at an early age, and are excited to share their experiences and work with students in the ACT. Wing's site in Mitchell will be the first of its kind in the world, offering a truly unique opportunity for students to see and be inspired by what is taking place in their community.



Wing staff presenting at Questacon

Wing has joined the Canberra Chamber of Commerce and the Mitchell Traders Association to support our close engagement with local businesses. Wing intends to proactively engage with both associations into the future, to continue to understand the community's concerns and ambitions for Canberra to ensure that local businesses are aware of the potential economic benefits our technology offers. In addition, Wing has also donated to local charities and nonprofits, including sponsorship of SouthFest, financial support for Communities@Work, sponsorship of the Crace Christmas Carnival, and other donations to local ACT causes.

Is drone delivery safe?

Wing's delivery drones are among the safest ways to transport goods, far safer than delivery by car or truck. Wing's safety framework is extremely rigorous, and we have multiple levels of redundancy built into our operations, including real-time systems that conduct safety checks on our drones and qualified pilots who oversee operations.

As a drone operator, Wing is regulated by CASA. Prior to receiving permission to conduct its trials, Wing provided detailed information and data about its aircraft and operations to demonstrate its high standards and reliability to operate safely over people and beyond visual line of sight.

In Australia, the regulation of drones is administered at a Commonwealth level by the Civil Aviation Act 1988 (the Act) and the Civil Aviation Safety Regulations 1998 (CASR). Wing's systems and operations comply with all applicable Australian aviation laws.

Australia's approach to drone regulation is forward thinking, with Commonwealth legislation focused on safety whilst still supporting innovation. It is this forward thinking attitude and the strong reputation of Australia's statutory civil aviation safety framework that make it a competitive place for investment by companies like Wing, whose operations adhere to the highest safety standards.

Noise

Wing understands the ACT community's concerns about noise and is committed to working with the community to manage and reduce any noise impacts. Wing believes in a national framework for aviation regulation, including impacts such as noise. Wing considers it important to standardise aviation noise regulation in order to ensure that safety remains paramount. Wing is concerned that if noise policies are developed at the state or territory government level in isolation from one another, it may place the safety of unmanned aircraft as a second priority, which would be inconsistent with the Commonwealth's aviation objectives.

Consistent policy will help to encourage competition and growth within industries supported by aviation. It will help Australia to remain an attractive market for innovation and investment. By comparison, incompatible rules in one territory or state may limit the opportunities available to other territories or states.

Community input is essential in developing smart and sensible solutions to any challenges regarding drone noise. Wing also recognises the important role that the ACT Government has to play in ensuring that any noise policy implemented at a national level is consistent with the ACT's planning framework. Wing supports policies that encourage Commonwealth aviation regulators to work closely with state and territory governments and industry to understand (and reduce) noise impacts.

There is more information regarding feedback from the community regarding noise, and our technical response to that feedback, in the "Learnings" section of this submission below.

Privacy

Wing strives to be a trusted member of the community; that includes protecting the privacy of our customers and non-customers alike. Wing complies with all applicable privacy laws and

regulations in Australia. In addition, we have strong policies and practices in place to protect the privacy of our customers as well as non-customers in the areas where we operate.

Our privacy policy sets out the kinds of information we collect, how it is stored, used, maintained and our practices related to disclosure. Wing takes its compliance with this policy very seriously.

What images Wing collects and why

Perhaps because so many recreational drone owners use their aircraft to capture photos and video, the Canberra community is understandably interested in what imagery might be captured in Wing's drone delivery process. Unlike recreational drones, Wing's delivery drones use cameras for safety purposes to navigate in the event GPS is unavailable. In the unlikely event that GPS is unavailable, the drone on-board camera navigation system compares images frame by frame to determine how fast and in what direction the drone is moving, providing a backup navigational reference. The camera is downward facing and collects low resolution, greyscale still-images of the ground or ground features. This process is computed on the drone in real-time without transmitting any images back to the human pilots.

What Wing does NOT collect and does NOT do

Wing's drone does not have a video camera like many hobby drones that can survey areas, take horizontal/side pictures, and zoom in, etc. The drone does not transmit any images in real time. No pilot or other human can access or review the on-board images during flight. No images are published, and we do not share images (unless compelled to do so by law).

What do the still images look like?

Included below is a still-image taken from the camera on a Wing drone. The photograph was taken at our minimum cruising altitude (~20m) flying over our test site in California; the individuals in the photo are Wing employees. A magnified version of this photograph is further below, as well as photos of publicly available satellite photography for comparison. In practice, bystanders are not recognisable in images taken while our drone flies at cruising altitude to or from its delivery destination.





Publicly-available satellite imagery (Bonython and Bondi Beach, Apple Maps)

When delivering a package our drone will hover at 7m. If the Wing customer is standing beneath the drone at the time of delivery, it is possible for the drone to inadvertently collect a more detailed image. We do not publish or share any images, including those of customers. The collection and handling of these images is described within the Wing Privacy Policy. Wing understands that for advanced technology to be accepted (and indeed welcomed) by the community, the community's expectations regarding privacy must be respected and upheld.

Who can see images and why?

Like in manned aviation, Wing maintains a log of flight data (aircraft sensors and performance, etc) so we can audit the health of our systems and ensure they are operating reliably and safely. This flight log data also includes some of the camera data. After flight, images are transmitted electronically to Wing's servers in the United States using secure protocols and deleted from the drone. Images are stored on secure servers, and can only be accessed on an "as-needed" basis by a small group of Wing software engineers with access permissions, all of whom are bound by strict confidentiality obligations. The flight data and images are reviewed in the event of an error or incident during flight, and also debugging, safety and system improvements. Access to the images is monitored and audited.

Summary of Images

1. **Compliance.** Wing complies with all applicable privacy laws and regulations.
2. **Safety.** Wing drones are equipped with a safety camera used for back-up navigation (in case of GPS inaccuracy or failure).
3. **Image Resolution.** The safety camera is grey scale. The camera points downwards and cannot be "aimed" towards particular objects. Image data is processed automatically on the drone's computer, and at no time is there a live feed of images from the drone to anywhere or anyone, not even to the pilot supervising flights. Imagery taken during the flight has a resolution comparable to publicly-available satellite imagery. In practice, people are not recognisable in images taken while our drone flies at its cruising altitude to or from its delivery destination.
4. **Access.** While the images are low resolution and bystanders are not recognisable, access is restricted to a small number of engineers, on an as-needed basis, and that access is audited to ensure compliance. Anyone with this access is subject to strict confidentiality obligations as a condition of employment with Wing.
5. **Cooperation.** Wing is committed to working with all relevant authorities to ensure that privacy regulations account for new technologies.

Summary of the trial In Bonython

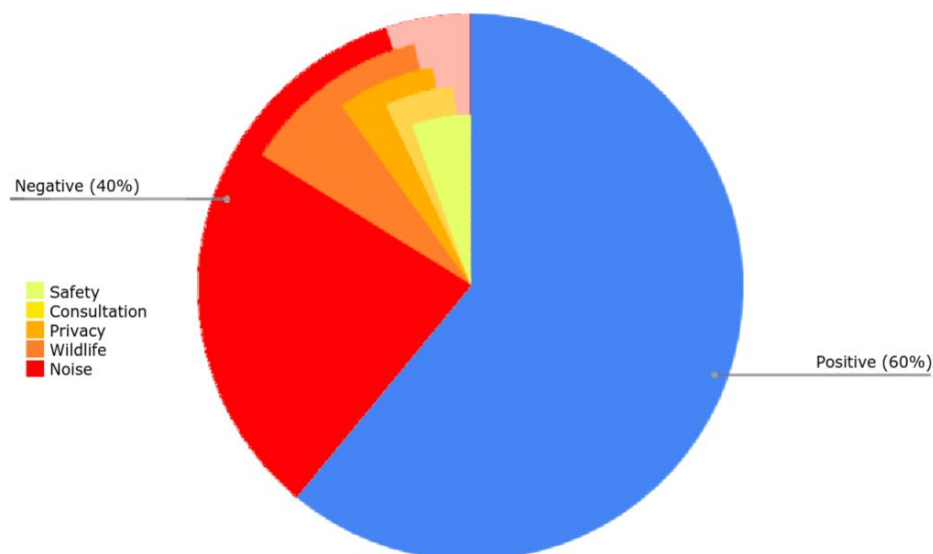
Feedback from Bonython residents received by Wing

Residents in Bonython provided feedback to Wing during the trial most commonly using a web response tool on our website, or emailing our company directly at wing-au@x.team. Wing's contact details were made available to residents in a number of ways including letterbox drops, community events and on our website; we also sent a single survey to testers to give them an opportunity to provide feedback on the trial and suggestions for improvements. Further, CASA referenced our contact information on their website, and Wing understands that elected officials shared our contact information when people reached out regarding the trial.

In total, we received feedback from 119 Bonython residents. Seventy-three Bonython residents (60 percent of respondents) provided positive feedback on the trial. This includes both customers and non-customers. The majority of that feedback was from customers describing their enjoyment of the service, and some non-customers provided feedback indicating that they supported the trial, or that they were proud it was taking place in Bonython.

Forty-six Bonython residents (40 percent of respondents) provided negative feedback. Of the negative feedback we received:

- 91 percent of negative feedback raised concerns regarding noise;
- 28 percent of negative feedback raised concerns about the effects of drones on wildlife or pets;
- 15 percent of negative feedback raised concerns about privacy;
- 11 percent of negative feedback raised concerns that there was insufficient community consultation prior to the start of the trial;
- 7 percent of negative feedback raised concerns about safety.



Duration of the trial in Bonython

Wing offered drone delivery service on a trial basis from July 2017 to early February 2018 in Bonython. In that period, our service was offered for 94 days in total, or on average, 12 days per month. Wing did not offer service every day of the week: we took breaks over holiday periods, and did not operate during total fire bans or poor weather, including heavy and sustained wind, or rain.

The busiest day was the last day Wing offered service in Bonython, where we delivered 85 customer orders. We averaged 22 deliveries per day during our normal operating periods, which equates to 2.5 orders per hour.

Testers

Of the 577 Bonython residents who registered their interest to join the trial (this represents 19 percent of the adult population in Bonython), Wing selected 164 residents to participate. We capped the number of participants in order to obtain detailed feedback on the experience of each of our testers.

Over the course of the trial, five people asked to withdraw from the service during the trial (and indicated so by unsubscribing from the app, or by emailing us directly).

Our 164 testers placed 2,113 orders with Wing. On average, each tester ordered 13 times over the course of the trial, and over 50 percent of our testers used the service at least once per month. 93 percent of our testers indicated they were very or extremely satisfied with the service in survey results.

Service

The average delivery flight time, not including order preparation or packaging time was 3 minutes and 15 seconds. When accounting for preparation and packaging time, the average delivery time was 7 minutes and 36 seconds from when a customer ordered an item on the app to when it was delivered to their home.

Merchants

Wing delivered items from a mix of national chains and ACT based businesses including Chemist Warehouse, Bunnings, Jasper + Myrtle, Kickstart Espresso, Guzman y Gomez, and a local franchisee of Bakers Delight. Forty-seven percent of orders were placed with ACT-owned small businesses.

Food items and coffee were the most popular items delivered, and over-the-counter chemist items were the most popular non-food items delivered.

Safety review

There were no safety incidents over the course of the trial. There were no injuries to people or wildlife, or damage to any property. On five occasions out of over 2,000 flights, our aircraft

performed a controlled precautionary landing in the neighbourhood while making a delivery or returning from making a delivery. In each of these cases, at no time did the drone perform in a way that it was not intended to -- for example, the most common cause of these precautionary landings was the aircraft detecting increasingly high winds. In each case, our team was able to retrieve the drone within five minutes.

We are aware of one occasion where a tester mistakenly entered the wrong address in the app resulting in Wing delivering to an address which was not the tester's address. We have since adjusted our app to reduce the risk of our customers mistakenly entering the wrong address.

Community outreach before the trial

Wing conducted community outreach for five months leading up to the start of the trial in Bonython. We hosted a range of community stakeholder meetings, briefings and demonstrations including (but not limited to):

- Canberra Business Chamber
- Canberra Innovation Network
- Canberra Airport Group
- Tuggeranong Community Council (three meetings)
- Tuggeranong Hyperdome (South Point)
- Department of Human Services (Caroline Chisholm Centre)
- Tuggeranong Town Centre Vikings
- Goodwin Aged Care
- Bonython Primary School
- Tuggeranong Dog Training Club
- Tuggeranong Hawks Football Club
- Canberra Institute of Technology
- Wildlife Drones
- ACT Equestrian
- Communities@Work
- ACT Conservation Council
- South Canberra Veterans Shed
- ACT Scouts

After we briefed community organisations, we hosted a community BBQ at Pine Island and letter dropped the Bonython community inviting them to speak to a member of the Wing team and see demonstrations.

Shortly after commencing service in Bonython, we conducted a second open house community event on the Greenway Oval. We invited everyone in Bonython by letter drop (excluding only those with signs requesting no solicitation on their letterboxes) and approximately 300 people from the Bonython area (and more from the greater Tuggeranong area) attended to ask questions of the Wing team in person and watch demonstrations of our operation.

Before the first deliveries, we also door knocked or left notes with the neighbours of our first testers, advising them that drone delivery would be taking place nearby.

Lessons from the trial

Wing as a Service

Our service was more popular than expected. Our testers valued the service, with a majority placing an order at least once a month. Our top 20 testers used the service weekly.

Our testers were a combination of younger and older people, and what they had in common was that they were busy. Households with two working parents, homes with shift workers, and people who worked from home were common amongst our customer base. Many of our testers had young children, and valued the capability of ordering meals quickly without needing to leave home, or having to wait considerably longer for car-based deliveries. Of the 164 testers who participated in the trial, the most frequent user was a grandmother who looked after her grandchildren at her home several days a week. She found the convenience of not having to take her grandchildren in the car to get small items extremely helpful.

For our merchants, some orders were meals or drinks that customers might not have bought if they needed to travel by car. Safe, fast and affordable delivery generated new transactions that might not have occurred otherwise. In preparation for potential service in Mitchell, we've had a number of small businesses from the Mitchell area (as well as from the Gungahlin suburbs) sign up, or inquire about partnering with Wing. We hope to partner with at least two dozen small businesses in Canberra when our more permanent operations commence.

Among the 164 testers we served, and the hundreds more in Bonython who signed up to participate, we are confident the trial reflects that the Canberra community (both consumers and small businesses) will utilise drone delivery service as a fast and affordable way to purchase everyday essentials.

Noise

Community dialogue was essential to help us identify and resolve challenges. For example, a number of residents registered feedback about noise. By engaging with those residents, we found that a majority of complaints referred to the 10 second hover during delivery.

In response to that feedback, we adjusted our flight routes to reduce the frequency of overflights, and also reduced the drone's speed, which helped to lower the sound generated. Additionally, and most significantly, we invested in the research, design and construction of a new noise abatement propeller that reduces the volume and pitch of the drone during a delivery. Our newest aircraft are now equipped with this propeller design, and we intend to use that technology on our delivery drones going forward.

Community outreach

We want to offer and operate a successful business in the ACT that provides customers in Canberra the fastest, safest, cheapest and most environmentally friendly way to have food and household items delivered. We recognise that the only way for drone delivery to be successful is to provide a service that our customers find useful, and that the larger community finds acceptable.

In feedback we received as part of the Bonython trial, 11 percent of people who reached out with negative feedback indicated they didn't feel we conducted enough outreach and consultation prior to starting the trial. We've taken that feedback on board, and have since designed and executed a significantly more robust outreach plan as we look to open and operate a more permanent site in Mitchell. We have door knocked our neighbours ahead of filing a development application; held over 30 pop-ups in the busiest areas of the neighbourhood shopping centres to answer questions about drone delivery; and met with a wider range of community stakeholders. Before we launch we will offer a more robust way to collect and act on feedback from residents, including making our team available in person to have conversations, which we think can lead to more actionable feedback.

Animals and wildlife

Dogs

Many of our testers have dogs. Some testers indicated to us that their dogs are not bothered by the drones or that their dogs quickly adapted to drone deliveries; other testers indicated that their dogs responded to drone delivery similarly to cars in the driveway or visitors ringing a door bell. We also received feedback from some residents in the community who indicated that their dogs were bothered by drone noise.

Because we only have anecdotal feedback, we started discussions with a leading research university. We hope to partner with them in the very near future to develop a more scientific framework for understanding the impact of drones on dogs and other domesticated animals and possible forms of mitigation.

Birds

Wing understands that Canberra is home to unique birdlife. Wing strives to reduce any negative impact on birdlife and other animals native to Canberra.

As with dogs, the effects of drones on birdlife has been largely anecdotal. We believe more scientific evidence is needed to better understand the impact on ACT birdlife. We have started conversations with the Canberra Ornithologists Group, as they have expertise in understanding and studying ACT birdlife. At the time of this submission, those discussions are underway.

At our test site in Bonython, birds were regularly present and did not seem to be bothered by the frequent operation of drones. In our customer flights into the Bonython neighbourhood, and in

our thousands of test flights conducted in Australia, we have no record of our drones striking a bird. On a few occasions, we observed magpies during mating season swooping towards our drone while hovering, without incident.

Conclusion and next steps

Although we intend to shift from operating on a trial basis in Bonython to a permanent service in Mitchell, Wing is constantly striving to improve its drone delivery technology based on community feedback . Wing seeks to offer a delivery service that provides food and household items to ACT customers in the fastest, safest, cheapest and most environmentally friendly way. We recognise that the only way for drone delivery to be successful is to provide a service that our customers find useful, and the larger community considers acceptable. We look forward to working with regulators, policymakers, local businesses, customers and the larger community to achieve this outcome.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 125

Date Authorised for Publication: 27 February 2019

From: [Patricia Clark](#)
To: [LA Committee - EDT](#)
Subject: DRONE Inquiry
Date: Friday, 22 February 2019 12:54:20 PM

Hello

I would like you to take into account my thoughts about Drones please:

- they should be used for all Emergency services
- for public authorities like ACTEW/Evo Energy/ACTEWAGL
- used in rural areas by farmers to locate stock etc over their own land
- They should not be used by private companies to make money, deliveries of any kind
- they should not be used in residential areas apart from those listed above
- they ARE an INVASION of PRIVACY and detrimental to the environment
- they should NOT BE IN the HANDS of the PUBLIC !

Thank you
Patricia Clark



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 126

Date Authorised for Publication: 27 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	John
Postal Address:	████████████████████
Phone:	
Email: (if applicable)	

Optional:

How long you have lived in the area:	██████
Occupation:	██████████
Any other background information:	

NOTE: Most submissions are made public once they are submitted. If you do not feel comfortable identifying yourself, make it clear in a covering letter that you wish your submission to remain anonymous. Your submission may still be made public but your personal details won't be.

What you can include in your Statements:

Below are some points that you may want to include in your submission -

- Why you are writing to the Inquiry: e.g. you live in the area, you have pets, small children, medical concerns etc.
 - Issues and concerns, e.g. privacy, data collection, safety, pets and wildlife.
 - Any problems, or how the drone deliveries have affected you and your household.
 - The location of your home to the flight path.
 - Examples of the impact it has had on you, e.g. noise, feeling angry or unsafe, animal behaviour, neighbour relationships.
 - Detrimental social impact in the community when many neighbours are now at loggerheads.
 - Selfishness of one person to get a delivery at the expense of so many households.
 - Why you think it is not feasible for drone deliveries in a suburban area eg sensibility of delivery of minor or one off consumables when a large shopping centre is so close.
 - Your feelings on the consultative process by Project Wing and the ACT Government.
 - Lack of regulations and monitoring of the trial.
 - No independent authority to provide feedback.
 - Concern and risks of delivery of chemist items.
 - Suggestions or improvements.
 - General comments.
-

I would like to comment on the following terms of reference:

- 1) The decision to base the trials of the technology in the ACT and surrounding region
- 2) The economic benefit of drone delivery technology being tested in the ACT including;
 - a. The investment that has been brought in to the Territory
 - b. The number of jobs that have been created as part of the trial
 - c. The extent of collaboration with local industry and academic institutions
- 3) The extent of regulatory oversight of drone technology at various levels of government including;
 - a. Local authorities such as EPA, Worksafe, Access Canberra
 - b. Commonwealth agencies such as Air Services Australia, Civil Aviation Safety Authority
- 4) The extent of any environmental impact as a result of trialling drone delivery technology on;
 - a. Residents within the trial area
We find the drones to be very noisy and annoying. We were not consulted prior to the trial or since then. We DO NOT want the trial to continue as they cause us a lot of irritation. Another factor is my wife works shift work and the drones flying over our house wake her up.
 - b. Native wildlife
There has been a dramatic reduction in the number of native birds in and around our house since the drone trial started.
 - c. Domestic animals
It causes dogs in the area to bark every time the drone flies over our house, which adds to the stress and annoyance of the drones themselves.
- 5) Ways to improve the use of drone delivery technology within the ACT

Fly 5 times higher than they do now and follow the roads so as to avoid flying over residential houses.
- 6) Any other relevant matter

(Thank you message)

Signature or name

TIPS:

- Typed electronic submissions are preferable, although legible hand-written submissions are acceptable. Submissions should not be stapled or otherwise bound.
- Submissions should be sent to:

VIA POST:

The Committee Secretary
STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
GPO Box 1020, CANBERRA CITY ACT 2601

HAND DELIVERED:

Committee Support Office
Office of the Legislative Assembly
196 London Circuit, Canberra ACT 2601

VIA E-MAIL:

Standing Committee on Economic Development and Tourism
Email : LACommitteeEDT@parliament.act.gov.au

- Address the Terms of Reference. You do not need to write about every term of reference but you will need to address at least one. Reference those that are relevant to you.
- Your submission may include facts, opinions or arguments.
- Your submission does not have to be long. Focus on the most important issues that matter to you.
- It can be in the form of a letter, a short document or a substantial paper.
- Be clear and concise about happenings.
- Stick with facts, ie don't use phrases like " the drones go over my house 500 times a day".
- Use headings.
- Use separate paragraphs for each issue.
- Use dot points.
- Use page numbers
- Be respectful and polite.

For more information refer to - **A GUIDE FOR MAKING A SUBMISSION OR APPEARING BEFORE A COMMITTEE OF THE LEGISLATIVE ASSEMBLY FOR THE ACT.**

https://www.parliament.act.gov.au/data/assets/pdf_file/0020/1063037/Witness-guide-2018-04.pdf

REMEMBER: Make sure you are aware of the closing date of the submission, being 22 February 2019.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 127

Date Authorised for Publication: 27 February 2019

Standing Committee on Economic Development and Tourism

Submission: Inquiry into drone delivery systems in the ACT

Name: Irena Kolak

Address: [REDACTED]

Phone: [REDACTED]

Email: [REDACTED]

To the Standing Committee on Economic Development and Tourism

I thank you for the opportunity to comment on the following:

The extent of any environmental impact as a result of trialling drone delivery technology on residents within the area, native wildlife and domestic animals

I have been a resident of Bonython for 9 years and chose to live here because of the suburbs close proximity to nature reserve and peaceful amenity. In mid July 2018 I received a card in my letterbox asking if I was interested in receiving deliveries of goods via drone. It was not something I needed and put the card in my recycling bin, thinking nothing further about it.

On Saturday 28 July 2018 I was walking with my children in reserve near Pine Island. Suddenly above us we heard what sounded like a large high pitched motor tearing through the sky, the noise reverberating around us, scattering the large group of kangaroos near us in all directions because they were startled. That was the start of my negative experience of living under the flight path of Project Wing delivery drones, which continued until the trial concluded on 2 February 2019.

The drones would fly over my home between 7.15am to 4pm Thursday to Saturday and from 8.15am to 4pm on Sundays. Towards the end of the trial, they flew Tuesday to Saturday. The invasive noise of the aircraft (a high pitched, strong motorised noise, with a loud howling noise that is haunting) woke my household in the morning. I was shocked at how loud they were, given it was winter, windows were closed, and the central heating was on. I found it hard to think when working from home, and my children found it hard to concentrate on school work, as every time a drone flew over my house, the noise could not be blocked out or ignored. If any of us were unwell, we were unable to sleep during the day, as every drone that flew over our home woke us. For example, one Saturday afternoon I had a migraine, and the invasive high pitched noise of the drone was so painful to me, I turned the extraction fan on in my ensuite to listen to it, to help me block out the noise of the drones.

After 7 weeks of living under the flight path of the drone aircraft, the noise was seriously wearing us down. Everyone in my family was distressed because we had lost the comfort of

the peaceful sanctuary that was once our home. My children asked me when the drones would stop flying, because they couldn't stand the noise anymore. We started to dread our weekends, because we knew we were going to have to deal with the drones. I had to plan outings to take my children away from the suburb, so they would have a break from the noise. We avoided going for walks in the reserve during operating hours of the drones, as it was impossible to enjoy the serenity of our bushland because it was filled with intolerable drone noise. I also noticed a flock of pink galahs that lived at the front of my house were gone. Thankfully the birds came back two weeks after the drone trial finished in February 2019.

I found other residents in my neighbourhood were very upset about the drone noise too. It was the talk of the suburb. Elderly residents were upset by the noise as they tried to garden in their normally peaceful backyards. A veteran was so distressed by the noise it triggered his PTSD and he had to go back on his medication. Another resident, a WW2 veteran said the drones made him distressed because they reminded him of bombing during the war. My neighbours' 3 year old granddaughter was too scared to go outside and play when she came to visit because she was spooked by the drones. Dogs barked more often and for longer periods when the drone trial was on. It's as if the whole suburb was freaking out from the noise and visual disturbance of the delivery drones.

The extent of regulatory oversight of drone technology at various levels of government

I called Access Canberra and was told to take my concerns over the noise and the drone trial to Airservices Australia. Airservices told me they had no remit over drone noise or activities, and that I needed to contact CASA as they were responsible for drones. When I spoke with their representative they said their remit over delivery drones was only for safety, and that if I had any problems regarding the noise I should contact Project Wing. The point of contact for noise complaints was the company making the noise? This was outrageous to me. I looked into getting the EPA into the suburb to measure the noise, but discovered their remit did not include drones as they were classed as aircraft. The Environment Protection Act 1977 does not cover noise from aircraft. No local or federal government body was responsible for monitoring the drone noise. I also found out from CASA that whilst they had set Project Wing specific regulations for the operation of delivery drones in Bonython, the company was self reporting any safety incidents to them. No government agency was monitoring the trial or assessing its outcome on behalf of the community.

The decision to base the trials of the technology in the ACT and surrounding region

The ACT Government, Project Wing and CASA worked together to bring the trial to fruition. **They never consulted with Bonython residents before the approval and set up of the drone trial.** Through FOI, I read the Risk Management assessment for "The use of delivery drones in the ACT-Project Wing January 2018" done by the department of Environment, Planning and Sustainable Development. I discovered the government was aware that the delivery drones were noisy, could be seen to be invading ones privacy as they filmed and collected data, and could be a safety risk. Many times in the document it was mentioned that the ACT Government "seek feedback from the community about their views" and "ensure a strong complaints handling process at the licensing stage". None of these things transpired. The Risk Management report also said, "While legal liability may not rest with the ACT

Government for a safety incident, reputational damage may be suffered as the ACT Government has allowed the project to take place”.

I find it extremely concerning and odd that the ACT Government did not let the residents of Bonython know that drones were to fly over their homes. They did not set up a formal mechanism for feedback, given this was supposedly a trial. Did they not want to hear from major stakeholders about their experience of drone delivery? Given the trial was to test new technology in a suburban environment, and that had never been done in the world before, shouldn't the ACT Government have required Project Wing to ask residents for consent to fly these aircraft over their homes?

In the Human Rights ACT 2004 Sect 10 Protection from torture and cruel, inhuman or degrading treatment etc “(2) No one may be subjected to medical or scientific experimentation or treatment without his or her free consent”. Many residents of Bonython felt they were treated like guinea pigs in an experiment. People felt used and angry. Their distress did not matter to the ACT Government who approved the trial, or Project Wing who continued the trial, even though they knew so many people, pets and birdlife were negatively affected by it and the quality of their lives diminished. I feel the human rights of residents in Bonython were violated. In the United Nations Universal Declaration of Human Rights Article 12 Right to Privacy “No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence”. That is exactly what happened to the residents of Bonython. The ACT Government arbitrarily decided to make the residents subject to a trial of new technology without our permission, agreement or input. When drones flew over our homes recording data, our privacy was compromised. My family was impacted for 6 months by invasive drone noise and we had no recourse to stop the trial. We often feared the drones would fall out of the sky on windy days as the aircraft wobbled/struggled to right themselves after a delivery. I saw a magpie swoop a drone during a flight.

In a Canberra Times article of 22 July 2017 “Canberra Airport not told about Project Wing drone delivery testing nearby at Googong”, by Elliot Williams, residents in Fernleigh Park were also not advised that drones were to fly. They found them noisy, the drones spooked their horses and they also had concerns about privacy. They wanted the trial to stop. Residents also said they were unhappy with the lack of initial consultation, and one resident “believed Project Wing only consulted with the community after she posted her disapproval on social media”. Project Wing also did not consult with the Canberra airport before the delivery drone trial commenced, “despite the test area falling less than two kilometres from the airport’s controlled airspace”. It seems like Project Wing have a pattern of non consulting behaviour. Why?

I find it interesting that residents in both Fernleigh Park and Bonython had the same reactions to the drones, and wanted the trials to stop. Bonython residents organised a petition and obtained over 1,000 signatures demanding the drone trial cease. MLA Mick Gentleman was asked by the Bonython community to come and meet with them in the suburb to discuss their concerns and he refused. He did have time though, in late 2017, to fly to Google offices in the USA and meet with them. The EPSD Risk Management report for Project Wing drones was done a few months after the US meeting. Via FOI I read the lease agreement for Project Wings use of the land in Greenway and it was under Googles name. So much for Google not setting up a base here in the ACT as mentioned in a Canberra Times article of 27 August 2018, by Blake Foden, “Minister offers Google support for ACT

office, drone trials stepped up". Mr Gentleman said "We'd like to take any opportunity we can to help them, as long as the Canberra community is on board as well". Did Minister Gentleman formally ask residents their views? No, he did not.

Three members of the Bonython Against Drones action group did eventually meet with him but he only gave them half an hour of his time in November 2018. It became obvious to residents that their negative experience was really of no great concern to Mr Gentleman. In a letter of reply to me he wrote:

"Project Wing's delivery drones are an entirely new business model. This trial is providing an opportunity to learn about the challenges and opportunities presented by delivery drone technology, including community concerns about noise. I appreciate your feedback as this will inform the ongoing development of the business model".

"Business model"?! Are the ACT Government and Project Wing one in the same? The development of their "business model" was more important than residents' quality of life for 6 months. It was totally ok to disrupt the lives of young mothers and babies who were trying to sleep during the day. Totally ok that sick people recovering from surgery couldn't go outside and sit in the sun in peace and quiet as they had been advised by their doctor. Totally ok that residents were so stressed by the drone noise they were in tears dreading their next migraine knowing the drone noise exacerbated their pain. This is why the majority of residents under the flight path of the drones have been relentless against the Project Wing trial. It damaged our community in a very real and visceral way. I will never forget the haunting sound of the drones. It is embedded in my limbic system now.

In summary

The peaceful amenity of our homes is the foundation of our lives, and is crucial to our health and well being. In 2015 the United Nations launched the Global Goals for Sustainable Development. Goal 9 is Industry, Innovation and Infrastructure:

"And we will live in a world where our industry our infrastructure and our best innovations are not just used to make money, but to make all our lives better".

Having a toasty, muffin, Mexican food or coffee delivered by drone is not something Canberrans really need. We can all pick up these items easily in our weekly shop or on our way to or from work. Grocery stores offer home delivery.

What I cannot buy from anywhere is the quiet comfort of my home. If drones never deliver another croissant no one will suffer. However, if 11,000 drone deliveries a day are permitted over Canberra as Project Wing have stated in the media as their goal, thousands of Canberrans will no longer enjoy peaceful suburbs and the beautiful mountain framed clear skies our bush capital provides. Are we expected to sacrifice our whole way of life to benefit a foreign drone company? The unique character of our nature filled city will cease to exist. I have lived this reality. It is a nightmare.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 128

Date Authorised for Publication: 27 February 2019

VIA E-MAIL:

Standing Committee on Economic Development and Tourism

Email : LACommitteeEDT@parliament.act.gov.au

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

SUBMISSION: INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT

Personal Details:

Name:	
Postal Address:	
Phone:	
Email: (if applicable)	

Please note, I would like my submission to remain anonymous.

I would like to make a submission to the above Inquiry.

I am aware of the drone delivery trial that has been taking place in the ACT suburb of Bonython, by the American Google company Project Wing since July 2018.

I know people who live in Bonython who have been directly impacted by it. I have seen and heard videos of the drones as they fly over people's backyards and deliver goods. I am aware that their lives, the sanctity of their homes and amenity have been severely intruded upon for 6 months and that they are outraged and very angry and upset about this.

I am shocked that the ACT Government would instigate such a trial to be conducted in the Australian Capital Territory. I am aware there is talk by the operator, Project Wing, of expanded operations early this year when no results of the Bonython trial have been made available to the public. It appears there may not even have been an evaluation of it undertaken, as the ACT Government allows Project Wing to self-report and self-assess.

I have heard the noise the drones make and am aware that it has been measured at 80db. It is an excessively loud, high pitched screaming noise which can be heard from all over the suburb and inside people's homes, sometimes waking them up from sleep. This is an appalling and unacceptable situation to inflict on people. People become unwell if they can't control their environments and are constantly subjected to excessively loud noise and intrusion into their lives.

Also the drones have cameras which are constantly recording downwards as they fly at 20 to 30m over people going about their daily lives, as happened to my friends, who feel indignant outrage about it. The public has no idea what happens to the film footage that is constantly being taken of them. I am now aware that it gets sent back to the USA. This also is an outrageous invasion of people's privacy and basic human rights, especially as the people of Bonython were not asked for their permission or

how they felt about it. There is the potential for such breaches of privacy and human rights to be illegal.

CASA has changed the usual Regulations that apply to drones to allow these Project Wing drones to fly within 5 m height and 2 m next to a person, without their permission. This also is unacceptable. It is exposing people to danger.

Drones can be blown by wind very easily on to people/children cars, buildings, power lines (causing bushfires) etc, and should not be allowed to fly so close to people because it is dangerous.

The ACT Government has told people it has no responsibility for the trial and has made no avenue of complaint available. (I am aware that 80% of Bonython residents rejected the drone delivery operation.). They told the many people who complained and have been distressed by it that they can complain to Project Wing.

The ACT Government, CASA, Airservices Australia, The Environment Protection Agency and the Federal Government all tell people that they are not responsible for the noise or privacy aspects of the Project Wing Bonython drone trial. This means that the excessively loud noise of the drones is unregulated, and no one is taking responsibility for the serious violation of people's privacy.

I am also concerned about the impact of the above on vulnerable people, such as the elderly and very ill. I believe the ACT Government is irresponsible and acting without integrity towards its constituents, putting money before people. I do not support the operation of drones over people's homes and in close proximity to them. The current regulations and compliance enforcements are inadequate to keep people safe and it is unconscionable to use people as guinea pigs in an experiment in corporate greed for international recognition.

Thank you for this opportunity to contribute to a significant social issue.



18 February 2019

VIA E-MAIL:

Standing Committee on Economic Development and Tourism

Email : LACommitteeEDT@parliament.act.gov.au

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

SUBMISSION: INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT

Personal Details:

Name:	CARLY MCINTYRE
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	[REDACTED]

I would like to make a submission to the above Inquiry, as follows:

I am strongly opposed to Project Wing drones making deliveries to my suburb, Bonython. I wasn't consulted about this - one day I heard a very strange, very loud, high-pitched squealing noise, like a hundred whipper snippers, flying over my backyard and wondered what on earth it was. It was a Project Wing drone.

Since July last year, I and my family have been subjected to this hideous noise every weekend, usually at least 10 deliveries per day, because our direct neighbours were ordering them. Each delivery involved 2 floggers at low level of our backyard. I will let you do the maths. They also got deliveries on some weekdays, often starting at 8am, as on weekends, and sometimes we were woken from sleep by this.

This situation has disrupted and dominated our lives for the entire time. The drone delivery service seems to encourage people to be lazy and have no regard for others. I think only selfish people would want to disrupt hundreds of people (which includes the elderly, babies, the sick and other vulnerable people and their pets) just for one cup of coffee.

I am also angry that the drones have cameras recording me and that my privacy is not protected by the ACT Government. I am aware that the extreme noise is not regulated and I think this involves negligence on somebody's part, as the drones have been measured at 80 db. Constant exposure to extremely loud noise causes deafness and many other serious health problems.

I think the ACT Government has done the wrong thing by the residents of Bonython. I think they have been acting in their own self-interest and not looking after the interests of their constituents, who after all, are the people who decide whether they will be in Government again or not.

I am greatly relieved that the drones are no longer disrupting mine and my family's life, and I know that thousands of other people feel the same way.

I would like the Committee to investigate whose idea it was to have the Project Wing drone trial in Bonython and why they let it happen without the proper regulations in place.

Thank you for this opportunity to have my say in this significant matter.

CARLY MCINTYRE

21/2/19



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 129A

Date Authorised for Publication: 6 March 2019

VIA POST:

The Committee Secretary
STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
GPO Box 1020, CANBERRA CITY ACT 2601

VIA E-MAIL:

Standing Committee on Economic Development and Tourism
Email: LACommitteeEDT@parliament.act.gov.au

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal details:

Name:	Ian McIntyre
Postal address:	
Phone:	
Email: (if applicable)	

1. Firstly, it should be noted that I am privy to the points and comments provided to the Standing Committee by my wife, Robyn McIntyre, and by Neville Sheather and Andrea Sheather, in their three separate and very detailed submissions. I am in full agreement with the content of those submissions, and in the interests of expediency I will not be repeating such content in this subject submission. Rather, I wish to emphasise particular aspects of the major problems associated with the Project Wing drone operations over the Bonython suburban area since they commenced, as I see them. Unless specific changes to the drone hardware, and methods of operation, are made by the operator prior to commencement of delivery operations over the northern ACT suburbs, then the same problems will continue to exist.

2. I believe I am well qualified to make critical comments on the subject drone operations, particularly in regard to flight safety and noise aspects, for the following reasons:

- For over eight years, I was a senior manager in the regulatory control area of the Civil Aviation Authority (CAA), which was the predecessor organisation for the current Civil Aviation Safety Authority (CASA) and Airservices Australia (ASA).
- Specifically:
 - I was the author of much airworthiness control regulatory material, and advisory documents for the aviation industry.

- I was the Head of Aircraft Certification, and as such was responsible for airworthiness certification of Australian civil aircraft, large and small. This also meant that I had detailed interface with the noise policy principals within ASA, for noise regulation of all Australian civil aircraft, at that time.

DRONE NOISE

3. Of all the major problems presented by operation of the Project Wing drones over Bonython, I contend that the noise made by the drones is the most serious one. I am well-qualified to make relevant comments, firstly because I live directly next door to the property which almost certainly had the maximum number of drone parcel deliveries for the entire Bonython area over the duration of the operating period, and secondly because of my professional experience interfacing in noise regulation as per the last sub-paragraph of paragraph 2 above.

4. Since the start of the subject drone trials, a large number of individuals in the Bonython suburban area (and this includes my family, members of the Bonython Against Drones (BAD) Action Group and particular friends in the area) have tried to lodge complaints about the drone noise with different agencies in the ACT area. The following is relevant:

– Various ACT Government elements receiving the phonecalls tried to pass the complainants across to CASA. This was naive and completely unhelpful, as CASA has no responsibility under its charter, Regulations and Orders for aircraft noise. When the CAA split into the current two regulatory arms, CASA and ASA, all aircraft noise control matters became the responsibility of ASA.

– If CASA was contacted directly, then complainants were told to contact ASA. This was the correct response from CASA.

– When complainants contacted ASA, they were invariably subjected to operator delays and further connections, as the staff involved often seemed to be unsure as to how complaints should be processed. Some were told to (incorrectly) contact CASA, or to contact the Department of Infrastructure, Regional Development and Cities. (Which includes the Transport policy arm). The majority were told that drones (also referred to as remotely piloted aircraft, or RPAs) were not subject to noise control by ASA or government bodies. In its submission to this Inquiry dated 14 January 2019, ASA has stated it has records of six complaints being received and actioned. Given the oversight that the Bonython Against Drones (BAD) Action Group has over the majority of the disaffected Bonython population, this statement by ASA vastly understates the complaint volume situation.

5. It is therefore obvious that no government or regulatory agency will take responsibility for drone noise control or the proper handling of drone noise complaints. This matter should have been fully investigated by the ACT Government during the period that the Project Wing trials were being planned by the relevant ACT

Government entities – it was obvious that drone noise was going to be a major factor in the acceptability or otherwise of drone operation. Due diligence and proper preparation in regard to noise control was not carried out. The Standing Committee should establish just who should have been responsible in this matter.

6. The ACT government has in recent months sought to downplay the drone noise situation, in various press articles and other forms of media, and by statements from government elected officials such as the Chief Minister. This is unacceptable, because it is contrary to the opinions of many hundreds of Bonython residents, and to qualitative and quantitative evidence. The following is relevant:

- The drone noise is particularly disturbing when the aircraft (this word “aircraft” is further discussed at length later in this submission) is decelerating, coming to the hover and then hovering over a parcel recipient’s property. Qualitatively, the sound is extremely penetrating, consists of many high-frequency pitches, and is likened to an extremely loud screeching, screaming sound. It is far more disturbing and unacceptable compared to other suburban backyard sounds such as those produced by a motor mower.

- The EPA has specified that the maximum allowable daytime residential backyard noise in the ACT is 45dB. Hovering Project Wing drones have been measured at 80-85 dB, such noise being measured approximately 3 m outside the boundary of a residence receiving a drone package, with the noise lasting for up to 1-2 minutes at a time. Sound intensity level is not linear, and so the Project Wing drone noise is many orders of magnitude above the level prescribed by EPA. (Of course, we have pointed out that EPA says it has no responsibility for aircraft noise).

7. Now going back to the ASA submission to the Inquiry dated 14 January 2019; ASA has said: “Federal Air Navigation (Aircraft Noise) Regulations 2018 are based on International Civil Aviation Organisation (ICAO) noise standards for aircraft types and models. However, RPAS are not included in these international standards and are not covered by the Australian regulations. (Our underlining). The Department of Infrastructure, Regional Development and Cities administers these regulations”. Furthermore, in discussions with some ASA staff during telecons, some members of the Bonython public were told that noise regulations only apply to aircraft, and drones are not aircraft for the purposes of the Regulations. This requires correction – drones are aircraft. ICAO Annex 6 Part 1 defines an aircraft as “..... any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth’s surface”. (The latter after “other” meaning hovercraft). The Department, ASA and CASA fully accept this definition; to not accept the definition would require Australia to lodge a Difference with ICAO in regard to ICAO Standards and Regulatory Practices (SARPs). So the noise control issue remains a major problem, and further investigation and resolution is required.

FLIGHTSAFETY AND AIRWORTHINESS CONTROL

8. Safety aspects of RPAS (and therefore drone) operations are the sole responsibility of CASA. The relevant work is undertaken by the RPAS Branch of the National Operations and Standards Division of the Authority. The Head of Power in this respect is the Civil Aviation Safety Regulations (CASRs) Part 101 titled “Unmanned Aircraft and Rockets”. At the outset, it should be noted that Part 101 does not prescribe, or even allude to, airworthiness design and production standards. Whilst in Australia, and the majority of ICAO Contracting States, small manned aircraft must be designed and built to specific design standards or codes which aim to ensure that the aircraft is sound in an airworthiness design sense. And it can be argued that an aircraft without a pilot requires many more airworthiness/system design requirements for safety and redundancy than one which is piloted – especially if it is going to operate semi-autonomously beyond visual line of sight (BVLOS) as do the Project Wing drones.

9. Chapter 3 of CASA’s Advisory Circular 101-01 v.2.1, “Remotely Piloted Aircraft Systems – Licensing and Operations” states: “It is CASA policy that the RPAS sector demonstrate a level of safety that is similar to that currently achieved in the conventionally piloted/ manned aircraft sector”. (Our underlining). This is only partly possible given what is stated in paragraph 8 above. It is understood that CASA, together with other Australian aviation regulatory agencies, and overseas RPAS control entities, is establishing firmer foundations for the aims expressed. However, this is only happening now. What must be asked is – why did CASA start to approve the Project Wing drone operation several years ago when this operation was going to be an experimental trial with the drones (aircraft!) flying at relatively high speeds at very low levels (usually around 200 feet) over the populous areas of a suburb? The risk levels would be much greater than those for a small manned certificated aircraft flying over the same area at a minimum height of 1000 feet. The follow-on question to this is – was any form of political pressure from the ACT or Federal Governments applied to CASA management to process the approvals? This should be followed up by the Standing Committee. And bearing in mind that CASA were aware (i) at the outset that this was a trial to obtain operating data, develop navigation and autonomous control systems and airspace management, all for the benefit of the drone operator, and (ii) that commencement of the trial would begin when the Federal inquiry into drone operation had identified many unresolved matters of safety importance; the primary purpose of the trial was not to illustrate fascinating commercial benefits to the ACT at large.

10. Having said that, we are aware from brief discussions with CASA some months ago that a failure risk analysis on the subject drone operation was carried out, with a desired risk factor goal of 1×10^{-8} . It was stated this was achieved, and so a

general parallel with the safety levels for small manned aircraft could be accepted. But with reservations established by the paragraphs 8 and 9 discussions above. To this end, it is recommended that the Inquiry require CASA to provide a full flight safety briefing to the Standing Committee to substantiate the levels of safety that are being discussed here.

11. It is also important to note that CASA's involvement required the issue of an Instrument of Exemption (Instrument Number CASA EX82/18, signed by the Director of Aviation Safety) against the requirements of CASR Part 101, already discussed in paragraph 8 above. The most important change incorporated in the Instrument was allowing a Project Wing drone to operate down to 5m overhead a person, and 2m horizontal distance from a person. This reduced the 30m total distance buffer from persons not involved in the operation (i.e. the Bonython residents) by a very large factor – in the full knowledge that this would not have been acceptable for operations in other Australian states, or by the Federal Aviation Administration (FAA) in the USA. We also noted that CASA had much difficulty in properly describing the distance parameters as discussed immediately above, and confusion in regard to this remained. Note here that much tighter restrictions on drone operation are laid down by the FAA in their regulatory document "14 CFR Part 107 – Small Unmanned Aircraft Systems". The most relevant part of this document reads "No person may operate a small unmanned aircraft over a human being, unless the human being is (a) directly participating in the operation of small unmanned aircraft; or (b) located under a covered structure or inside a stationary vehicle that can provide reasonable protection from a falling small unmanned aircraft".

12. Finally, CASA has acknowledged that there is no airworthiness certification process in being for RPAS/drones, and this is logical as there are no airworthiness design standards laid down for these vehicles at this time. Given the comparative risk levels discussed in paragraph 9 above, it would seem to make much sense that small RPAS aircraft such as the Project Wing drone should have airworthiness design standards prescribed (and logically placed in CASR Part 21 "Certification and Airworthiness Requirements for Aircraft and Parts") by CASA, and then subjected to a design certification process.

Thank you.

Ian McIntyre
12 February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 130

Date Authorised for Publication: 27 February 2019

Mr. Jeremy Hanson MLA
Chair
Standing Committee on Economic Development & Tourism
GPO Box 1020
London Circuit
Canberra ACT 2601

Dear Mr. Hanson,

Inquiry into Drone Delivery Systems in the ACT

I thank the standing committee for the opportunity to make this submission into the ACT Legislative Inquiry into drone delivery systems in the ACT. I have read the terms of reference for this inquiry and have provided responses in this submission addressing them. I grant permission for this submission to be made public.

Regards

Damien Haas

[REDACTED]
[REDACTED]

The arrival of disruptive and innovative technology will always have an impact. How that impact is managed in the ACT is something that can have legal, business, social, and environmental implications. It is important that the committee receive a broad range of views before reaching any conclusion, or making any recommendations.

The recently concluded Wing drone delivery trial in the ACT is a good example of the ACT Governments willingness to embrace and encourage new business in the territory. For a new business to only have to meet local regulations and not state government AND local council regulations, provides a unique business environment and opportunity in Australia that other state governments cannot offer.

Regulatory issues associated with drone trials

It was a good decision for Wing to base their trial in the ACT, as it sets a good example for other international companies thinking of a location to trial a new business model. The ACT community embraces new business models (as Uber and Airbike demonstrate) and this progressive community support encourages the ACT Government to work through the regulatory, environmental, community, social and legal implications of trialling innovative technology. It is something the ACT Government should promote internationally and domestically, to attract new businesses and established businesses seeking a business friendly environment to operate in. Government support coupled with willing consumer support, is a significant advantage, and an important factor when investors make decisions.

Where the Uber and Airbike arrivals have demonstrated that cooperation between the ACT Government, and the private companies investing in the ACT can work successfully with a single regulatory environment to navigate, the Wing trial has demonstrated that new technologies can expose gaps in regulatory frameworks that provide unclear pathways to resolving perceived negative impacts and disruption to ACT residents.

The authority granted to Wing by the federal government, through the regulating agencies Air Services Australia and the Civil Aviation Safety Authority, did not provide a satisfactory mechanism for residents' issues to be addressed. An inability to seek a remedy through the ACT Environmental Protection Agency, Worksafe or Access Canberra, by residents in the trial area, is the issue that led to this inquiry, and requires resolution.

This unclear delineation between federal and territory government responsibilities in addressing residents concerns over perceived noise, privacy

and environmental impact, is an area that the ACT Assembly can resolve through legislation or regulation, and ensure that future technology or business model trials satisfy the business community and the ACT community.

Business impact of drone trials

It was a good decision by Wing to base their drone technology trial in the ACT as it provides an international example for other businesses looking for a progressive environment to trial new technology or business model in. The ACT Government should welcome and encourage all businesses to explore the ACT as a place to establish new business and investment.

Ultimately, it is not a decision of the ACT Assembly whether it allows or invites disruptive or innovative technologies or business models to operate in the ACT. The ACT Assembly can however, through cooperation, regulation and legislation, provide a simple framework that businesses seeking a test market can satisfy.

As international experience shows (and share bike operations around Australia amply demonstrate), some companies simply arrive and operate without invitation. Where community impact is minimal or gradual (such as the replacement of video cassette rental stores, first by DVD's and now by downloadable media) there may be no requirement for new or more regulation or legislation to be introduced, as the business and wider community adjust and incorporate it. In other instances, such as Uber providing a more attractive business model than the taxi industry (where monopolistic practices placed artificial values on licences to operate), there may be a negative outcome for individual businesses, but a more positive outcome for consumers.

The economic impact of the recent drone trial has already been proven as positive. The decision by Wing to establish a local business venture in Mitchell, following a trial in Bonython, illustrates this. Some local businesses took advantage of the Wing trial to establish a new low cost delivery system. Will the establishment of a business in Mitchell attract new partners to use the same technology? That remains to be seen, and like all business ventures the success or failure is the concern of its investors and creditors, and consumers it attracts.

A negative impact may be seen in the employment sector, as the people displaced by drone delivery would require alternate employment. This has not occurred during the limited trial, but may occur as the commercial operation based in Mitchell expands.

The willingness of Wing to partner with local businesses instead of international franchises would demonstrate greater commitment to the Canberra business community, and provide a greater incentive for the ACT Government to ease regulatory burdens to business operation when trials move into larger commercial operations.

Environmental impacts of drone trials

The environmental impact of drone trials and operations are important to consider. The potential replacement of fleets of internal combustion engine vehicles criss-crossing Canberra delivering packages or food, is significant and warrants further study and analysis.

The impact of drone operations (either by the noise the drones emit, or their mere flying presence) on wildlife (birds, dogs etc) should also be studied. Anecdotal data supplied by residents opposed to drone operations may not be clinically accurate, but does indicate that a problem may exist, and requires study.

A small fleet of test drones in one suburb of Canberra may show no environmental impact outside that of a loud motorcycle on a suburban street, a large scale commercial operation (or multiple providers of the same type of technology) could see several hundred drones in operation at all hours of the day. While flocks of birds may have adapted to avoid colliding with each other in flight, it is not clear that flocks of drones have yet reached that evolutionary level.

During the trial delivery could only be made to standalone residences. If this was to continue in commercial operations, would prospective customers place a premium on standalone low density housing with driveways and backyards (required for touchdown of parcels delivered by drones), instead of medium or high density housing with shared public space. The long term planning impacts from consumer behaviour change may not be immediately felt in the planning and property sectors, but are worthy of further study.

While some of these issues may seem problematic, they do provide an opportunity for prospective businesses to partner with local academic institutions to study environmental impacts, and benefit both the commercial partner and local research organisations.

The Environmental Protection Agency may also as a result of the drone trial, community concerns and this inquiry, seek to broaden its legislative and regulatory ability to cover drone operations of this type.

Community Consultation

The recently concluded drone trial has demonstrated the importance of business ventures that may have an impact on the community, performing proper community consultation before they commence, and during any trial. Early Wing consultation was poorly communicated, and contact mechanisms not optimal. Community consultation initiated when resident concerns became quite public, were provided by local public relations firms, and not by technical staff performing the trials, or management from Wing.

At community consultation events, (community council meetings, shopping centre or fete stalls for example) Canberra residents really do want to speak to the decision makers or technical staff, and not simply be advised or directed to information already found in promotional material. Wing management managed to phone in to local radio stations but not appear in public, and this was clearly noted by the community.

As the Wing trial was a private business venture with no ACT Government investment, or regulatory approval required. This also meant that points of contact between residents and the private business were unclear, and problems unresolved. Residents expected the ACT government to listen to or remedy issues arising from the trial, and were unable to understand that the ACT government and the Environmental Protection Agency had no powers of enforcement for (as an example) noise complaints. Similarly the privacy and data retention issues had no clear point of contact for a resident to ask for a federal or territory agency to take action.

The expectations raised by affected Bonython residents during the Wing trial around community consultation were valid, and illustrate the difference between a government agency and a private business. If an ACT or Federal Government agency had trialled a speculative venture (perhaps in partnership with business) there would be consultation framework in place, points of contact for advice, to report issues etc. These were lacking during the Wing trial.

It may be useful for the ACT Government to establish a guide for future similar business ventures, that list the types of community consultation expected, and a list of community, business and ACT government agencies that could be consulted with.

Conclusion

The recent drone trial was a positive experience for the ACT and further trials by other businesses should be encouraged.

Many residents welcomed the trial and used the service offered by Wing for the duration of the trial, providing valuable commercial data for future commercial operations and furthering the advance of drone technology for non-commercial functions such as delivering medical supplies, emergency supplies to stranded hikers, or people stranded by flood waters.

Even though some residents reported negative experiences arising from the drone trial, this is actually a positive outcome for the longer term. Establishing the regulatory gaps, the areas in which the communities expectations weren't met, any environmental issues that could arise – it is much better that these things are uncovered in a small scale trial than if a disruptive innovator simply arrived in the capital and commenced business operations territory wide.

The establishment of a commercial operation in Mitchell further demonstrates the success of the drone trial. The willingness of the commercial operator to work with the ACT Government in establishing some guidelines that could be applied to similar operations locally and Australia wide, indicates that the ACT Government is business friendly and seeking to enable new business models, not proscribe them, if they can deliver community and business benefits.

Through this inquiry, the committee now has the ability to recommend regulatory and legislative changes (at Territory and federal government level) that can ease future business trials, provide ACT Government enforcement mechanisms and satisfy community concerns.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 131

Date Authorised for Publication: 27 February 2019

VIA E-MAIL:

Standing Committee on Economic Development and Tourism

Email : LACommitteeEDT@parliament.act.gov.au

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

SUBMISSION: INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT

Personal Details:

Name:	
Postal Address:	
Phone:	
Email: (if applicable)	

Please note, I would like my submission to remain anonymous.

I would like to make a submission to the above Inquiry.

I am aware of the drone delivery trial that has been taking place in the ACT suburb of Bonython, by the American Google company Project Wing since July 2018.

I know people who live in Bonython who have been directly impacted by it. I have seen and heard videos of the drones as they fly over people's backyards and deliver goods. I am aware that their lives, the sanctity of their homes and amenity have been severely intruded upon for 6 months and that they are outraged and very angry and upset about this.

I am shocked that the ACT Government would instigate such a trial to be conducted in the Australian Capital Territory. I am aware there is talk by the operator, Project Wing, of expanded operations early this year when no results of the Bonython trial have been made available to the public. It appears there may not even have been an evaluation of it undertaken, as the ACT Government allows Project Wing to self-report and self-assess.

I have heard the noise the drones make and am aware that it has been measured at 80db. It is an excessively loud, high pitched screaming noise which can be heard from all over the suburb and inside people's homes, sometimes waking them up from sleep. This is an appalling and unacceptable situation to inflict on people. People become unwell if they can't control their environments and are constantly subjected to excessively loud noise and intrusion into their lives.

Also the drones have cameras which are constantly recording downwards as they fly at 20 to 30m over people going about their daily lives, as happened to my friends, who feel indignant outrage about it. The public has no idea what happens to the film footage that is constantly being taken of them. I am now aware that it gets sent back to the USA. This also is an outrageous invasion of people's privacy and basic human rights, especially as the people of Bonython were not asked for their permission or

how they felt about it. There is the potential for such breaches of privacy and human rights to be illegal.

CASA has changed the usual Regulations that apply to drones to allow these Project Wing drones to fly within 5 m height and 2 m next to a person, without their permission. This also is unacceptable. It is exposing people to danger.


Drones can be blown by wind very easily on to people/children cars, buildings, power lines (causing bushfires) etc, and should not be allowed to fly so close to people because it is dangerous.

The ACT Government has told people it has no responsibility for the trial and has made no avenue of complaint available. (I am aware that 80% of Bonython residents rejected the drone delivery operation.). They told the many people who complained and have been distressed by it that they can complain to Project Wing.

The ACT Government, CASA, Airservices Australia, The Environment Protection Agency and the Federal Government all tell people that they are not responsible for the noise or privacy aspects of the Project Wing Bonython drone trial. This means that the excessively loud noise of the drones is unregulated, and no one is taking responsibility for the serious violation of people's privacy.

I am also concerned about the impact of the above on vulnerable people, such as the elderly and very ill. I believe the ACT Government is irresponsible and acting without integrity towards its constituents, putting money before people. I do not support the operation of drones over people's homes and in close proximity to them. The current regulations and compliance enforcements are inadequate to keep people safe and it is unconscionable to use people as guinea pigs in an experiment in corporate greed for international recognition.

Thank you for this opportunity to contribute to a significant social issue.


22 February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 132

Date Authorised for Publication: 27 February 2019

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

Submission: INQUIRY INTO DRONE DELIVERY SYSTEM IN THE ACT

Personal Details:

Name:	Tuggeranong Dog Training Club Inc (TDTC)
Postal Address:	PO Box 1803, Tuggeranong, ACT 2901
Phone:	██████████
Email: (if applicable)	██████████

Optional:

How long you have lived in the area:	TDTC was founded in 1995 and is located in Greenway.
Occupation:	Volunteer run not for profit dog training club
Any other background information:	<p>The TDTC was established to address the need within the community to provide obedience training for dogs. Our grounds, located in Greenway, include a clubhouse, fully fenced formal training areas with night lighting, and enclosed areas where members can take their dogs for safe, secure off-lead exercise.</p> <p>Given the ACT Government concerns to ensure the safety of the community from dangerous dogs, the role of the TDTC is critical in helping to reduce the number of untrained and potentially dangerous dogs in the ACT. There is evidence that dog training enhances community safety.</p> <p>We offer a graduated training program. This allows the dog owner and their dog to progress at their own pace in a fun, supportive environment. Classes are held for the owner who would like a well behaved companion or those interested in competing in dog sport events such as flyball, agility, rally obedience and obedience trialling.</p> <p>The TDTC is the only club servicing the Tuggeranong area and our training methods are scientifically based and proven.</p> <p>The TDTC has approximately 500 members, noting that membership is per household so the actual numbers are much higher. Training is held on our grounds at Greenway on the majority of days each week. On several of these days there can be 50-100 people and approximately the same number of dogs undertaking training at the one time.</p> <p>TDTC serves a critical community function in improving dog behaviour and thus community safety and enjoyment.</p>

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NOTE: Most submissions are made public once they are submitted. If you do not feel comfortable identifying yourself, make it clear in a covering letter that you wish your submission to remain anonymous. Your submission may still be made public but your personal details won't be.

What you can include in your Statements:

Below are some points that you may want to include in your submission -

- Why you are writing to the Inquiry: e.g. you live in the area, you have pets, small children, medical concerns etc.
- Issues and concerns, e.g. privacy, data collection, safety, pets and wildlife.
- Any problems, or how the drone deliveries have affected you and your household.
- The location of your home to the flight path.
- Examples of the impact it has had on you, e.g. noise, feeling angry or unsafe, animal behaviour, neighbour relationships.
- Detrimental social impact in the community when many neighbours are now at loggerheads.
- Selfishness of one person to get a delivery at the expense of so many households.

- Why you think it is not feasible for drone deliveries in a suburban area eg sensibility of delivery of minor or one off consumables when a large shopping centre is so close.
 - Your feelings on the consultative process by Project Wing and the ACT Government.
 - Lack of regulations and monitoring of the trial.
 - No independent authority to provide feedback.
 - Concern and risks of delivery of chemist items.
 - Suggestions or improvements.
 - General comments.
-

I would like to comment on the following terms of reference:

- 1) The decision to base the trials of the technology in the ACT and surrounding region

Project Wing

Project Wing, which is now known as Wing, established its drone delivery service on public land adjacent to the Club's western boundary with their landing/takeoff area very close to the fences of our dog free-run area.

The TDTC:

- was not consulted prior to the trial and found out about Project Wing by accident in February 2018.
- sought an urgent meeting with Project Wing, which while pleasant, could best be summed up as: the Project Wing representatives were long on the spin, short on detail and, on occasion, contradictory, despite the TDTC representatives pressing for detail. We had undertaken relevant research and were asking critical questions about the basics of their operation about which they should have had answers but were unable to provide at the time.
- briefed Project Wing on the club and issues and risks we could see arising from the Project Wing drone activity.

At the meeting Project Wing stated:

- they were undertaking a trial but could not specify the duration of the trial;
- they couldn't provide assurances that they wouldn't fly over the Club grounds and that they could fly over anything except airports and helidromes;
- flight paths had not been determined but as the meeting progressed it became clear that Project Wing intended to overfly the TDTC grounds, likely as low as 30 metres with potential safety implications for our members and potential issues around adverse impact on the animals; (Comment: Project Wing's drones did regularly fly over our club grounds.)
- there could be as many as 12 -14 drones in use. Project Wing was initially reluctant to give a number of drones but as the meeting progressed advised as many as 12 to 14 was under current consideration;
- they did not provide data on the number or frequency of drone flights;
- they claimed the noise level for one drone was 46 decibels at 200 metres. Despite requests, no further noise data was provided, other than to advise the drones sound as 'loud as a vacuum cleaner'. (Comment: our subsequent direct experience showed that this was simply not the case, and that the drones were significantly louder than 'a vacuum cleaner'.)
 - The noise of drones has been a particular concern for our Club. Dogs can hear about 4 times the distance of a human and have a wider spectrum for hearing (up to around 45,000Hz). The potential impact of high pitched drones on dogs is still unclear, but of serious concern.
- Project Wing advised that the drones would take images as they fly. This included flying over the TDTC grounds. Project Wing stated that this data would be 'tightly held' within Project Wing.

- Privacy issues are a critical issue for TDTC members. No reasonable explanation was supplied as to why Project Wing would take images of an entity and people unrelated to them, who would view the images, how the images would be stored, for how long or how securely, or who owned the images;
- Project Wing did not have data in respect of the impact of drones on domestic animals, in particular dogs, nor of the impact of frequent and potentially close drone activity on dogs (or domestic animals more broadly); and
- TDTC requested a copy of any risk assessment being prepared, which Project Wing agreed to provide when completed. TDTC understand that CASA was involved in the development of this risk assessment.

Project Wing offered to provide whatever documentation it could. As of this time, we have not received a copy of the risk assessment and we received little meaningful material from them.

The TDTC asked Project Wing to provide further information about what was proposed for the trial including but not limited to; volume and frequency of drone flights, flight paths, flight altitudes, noise levels, whether the drones can overfly people and at what height, safety requirements and assessment, licensing requirements and any authorizations or waivers already provided to Project Wing etc to allow us to make an informed assessment of the impact of Project Wing on our club, its members and their dogs.

The TDTC expected this information be readily available given Project Wing's previous and existing operations and that such information would usually be included in a business plan. TDTC also sought advice from Project Wing on its plans, activities, drone data, noise levels, privacy policies, etc which could be passed to our members and considered by the Committee as part of its risk management process and duty of care to our members.

Twelve months later, much of this information has yet to be received.

ACT Government and local MLAs

The TDTC also wrote to the ACT Government and our local MLAs asking that the TDTC be kept informed of developments in respect of Project Wing and that we be given the opportunity to input into deliberations on these developments and in the identification of solutions before any final decisions / approvals are made on any permanent establishment of commercial drone activity on the Project Wing site in Greenway.

We met or engaged with a number of MLAs.

In the main we were concerned to ensure that the TDTC was not adversely impacted by the activities of Project Wing and that the Club could continue to provide a much needed community function for Tuggeranong, and Canberra more broadly, from our Greenway site.

We have not been given any opportunity to input into deliberations on Project Wing's activities until this Inquiry.

CASA

The TDTC made similar representations to CASA about the Project Wing trial and our concerns. To-date, we have yet to receive a response from CASA. See below under paragraph 3b for further detail.

Summary

The TDTC found that Project Wing was superficial in its communication and did not address many of the Club's concerns despite their close proximity and potential to impact on the Club's members, dogs, grounds and business. While the ACT Government and local MLAs, made positive assurances, it did little to allay concerns that due process had been followed, and that the Club's rights and business would be protected.

The Club is thankful that Project Wing has now moved from the land adjacent to the Club's grounds, and that our Club activities can continue without the incessant noise from drones taking off and landing, and the intrusion of drones flying across our classes and member activities.

- 2) The economic benefit of drone delivery technology being tested in the ACT including;
 - a. The investment that has been brought in to the Territory

No comment

- b. The number of jobs that have been created as part of the trial

No comment

- c. The extent of collaboration with local industry and academic institutions

The TDTC initiated contact with Project Wing, even though they were the newcomers to the community and were conducting drone activities that had the potential to adversely impact and disrupt the Club's activities. Despite congenial discussions, Project Wing's consultation was at best superficial, lacked detail and was peppered with responses that they would have to check this or that with their US parent company.

Data and information, which we thought would have been readily available (eg the length of their trial), was not forthcoming. We were left with the impression that they told us only what they thought would keep us happy and that their consultation was more about 'ticking a box' than any real constructive engagement. Project Wing rarely followed through with providing information that the Club deemed necessary to determine the impact of its functions and business activities, and what mitigating strategies if any would be required. Any information that was provided was superficial and failed to address the Club's issues and concerns. However, in the interests of 'being a good neighbour' the Club did not press Project Wing for the requested information, rather we lived with the disruptive noise. We would prefer not to have to experience this again in the future.

3) The extent of regulatory oversight of drone technology at various levels of government including;

a. Local authorities such as EPA, Worksafe, Access Canberra

No comment.

b. Commonwealth agencies such as Air Services Australia, Civil Aviation Safety Authority

The TDTC wrote to CASA expressing our concern re Project Wing's drone activities. We sought clarification as to whether drones could overfly people without their permission, and we sought an opportunity to comment on any draft risk assessment being prepared in respect of Project Wing's activities.

We also requested specific data on the following: volume and frequency of drone flights, flight paths, flight altitudes, noise levels, whether the drones can overfly people and at what height, safety requirements and assessment, licensing requirements and any authorizations or waivers already provided to Project Wing etc. This was to allow our Club to make an informed assessment of the impact of Project Wing on our club, its members and their dogs to ensure we met our duty of care to our members and their dogs.

To-date, we have not been given an opportunity to input to, comment on, nor have we seen any risk assessment on Project Wing's activities. Nor have we received any response from CASA in respect of the information/data we requested.

4) The extent of any environmental impact as a result of trialling drone delivery technology on;

a. Residents within the trial area

The drone activity during our training times was disruptive and noisy. For example:

- When drones overflowed our grounds during one of our regular session intake lectures for new members, which were held on a Sunday morning, the lecture had to be stopped on five occasions each time a drone flew over, due to the disruptive noise. This was during an approximately 50 minute period from 0900 to 0950 hours.
- On another Sunday morning there were no less than three drones flying directly over our obedience classes between 0900 and 0930 hours.
- Some dogs reacted badly to the drones. One dog was so distracted and frightened that it almost ran into a fence. Other dogs were visibly disturbed by the drone noise.
- Some of our members wrote directly to Project Wing to complain about the disruptive noise.

b. Native wildlife

- Corresponding with the drone activity, some of our members had noticed a reduction in bird life around our grounds (which include a pond which regularly attracts a range of birds and other wildlife). Since the drone activity has ceased with the departure of Project Wing from Greenway, the bird life has been returning.

c. Domestic animals

See our comments in respect of dogs above.

5) Ways to improve the use of drone delivery technology within the ACT

The TDTC is of the view that drone operations with their current noise levels should not be situated in close proximity to community service activities such as a dog obedience club.

6) Any other relevant matter

No.

The TDTC appreciates the opportunity to comment on the use of drone delivery systems in the ACT and is happy to provide further comment if required.

President and Committee

Tuggeranong Dog Training Club

Amanda Bateup - President

Leslie Weatherall – Vice President

Mike Askew

Bob Nilsson

Julie Watson

Jenny Lean

Sarah Tomlin

Kylie Noonan

Lisa Gill

Mick Medson

POCs:

Amanda Bateup – President ()

Leslie Weatherall

Mike Askew

TIPS:

- Typed electronic submissions are preferable, although legible hand-written submissions are acceptable. Submissions should not be stapled or otherwise bound.
- Submissions should be sent to:

VIA POST:

The Committee Secretary
STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
GPO Box 1020, CANBERRA CITY ACT 2601

HAND DELIVERED:

Committee Support Office
Office of the Legislative Assembly Legislative Assembly for the ACT
196 London Circuit, Canberra ACT 2601

VIA E-MAIL:

Standing Committee on Economic Development and Tourism
Email : LACommitteeEDT@parliament.act.gov.au

- Address the Terms of Reference. You do not need to write about every term of reference but you will need to address at least one. Reference those that are relevant to you.
- Your submission may include facts, opinions or arguments.
- Your submission does not have to be long. Focus on the most important issues that matter to you.
- It can be in the form of a letter, a short document or a substantial paper.
- Be clear and concise about happenings.
- Stick with facts, ie don't use phrases like " the drones go over my house 500 times a day".
- Use headings.
- Use separate paragraphs for each issue.
- Use dot points.
- Use page numbers
- Be respectful and polite.

For more information refer to - **A GUIDE FOR MAKING A SUBMISSION OR APPEARING BEFORE A COMMITTEE OF THE LEGISLATIVE ASSEMBLY FOR THE ACT.**

https://www.parliament.act.gov.au/data/assets/pdf_file/0020/1063037/Witness-guide-2018-04.pdf

REMEMBER: Make sure you are aware of the closing date of the submission, being 22 February 2019.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 133

Date Authorised for Publication: 27 February 2019

The Standing Committee on Economic Development and Tourism
Inquiry into Drone Delivery Systems in the ACT.

Please note that I would like my submission to remain anonymous

- I am not a resident of Bonython but I am opposed to a trial that supports drones invading Canberra's skies and in particular, where the underlying purpose of those drones is dictated by consumerism.
- I acknowledge that there is a place and time for drone activities with real and dedicated purpose and they should only be used by professional bodies for specific needs eg: emergency, medical. Not unnecessary commercial drone delivery.
- It is very disappointing to hear that the Bonython trial has occurred with little or no consultation with the public. I trust this enquiry will advise of the real outcomes of that trial and provide opportunity for the public to participate in any decision regarding the future of drone delivery in the ACT including any extension of the trial to various north side suburbs. An extended trial should not proceed unless the affects of drone delivery technology are fully understood and mitigated.
- Drone delivery technology requires low flying drones over suburbia. Some adverse consequences of this activity could include incessant noise level, invasion of privacy, congested air activity, disturbance to pets and wildlife (particularly birds), harmful distraction (eg: to vehicles/cyclists), interference (eg: with sporting/social/cultural events).
- The majority of Canberra residents enjoy the benefits of living in a city that generally maintains a balance between "progress" and nurturing the natural environment. Drone delivery of consumables such as food and coffee trespasses the clear skies, tranquillity and privacy we are so fortunate to enjoy from our own backyards
- There is a need to tread carefully. Drone activity needs to be properly regulated to avoid undesirable consequences.
- Bragging rights for being the first Australian city to adopt drone delivery technology may fade long before the resolution of an unforeseen problem. It is one thing to aim for a progressive and innovative city, it is another to spoil it just for the sake of saying "we did it first".



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 134

Date Authorised for Publication: 27 February 2019

VIA E-MAIL:

Standing Committee on Economic Development and Tourism

Email : LACommitteeEDT@parliament.act.gov.au

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

SUBMISSION: INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT

Personal Details:

Name:	HELEN SCHUMANN
Postal Address:	
Phone:	
Email: (if applicable)	

Please note, I would like my submission to remain anonymous.

I would like to make a submission to the above Inquiry.

I am aware of the drone delivery trial that has been taking place in the ACT suburb of Bonython, by the American Google company Project Wing since July 2018.

My family live in Bonython and have been directly impacted by it. I have seen and heard videos of the drones as they fly over their and other people's backyards and deliver goods. I am aware that their lives, the sanctity of their homes and amenity have been severely intruded upon for 6 months and that they are outraged and very angry and upset about this.

I am shocked that the ACT Government would instigate such a trial to be conducted in the Australian Capital Territory. I am aware there is talk by the operator, Project Wing, of expanded operations early this year when no results of the Bonython trial have been made available to the public. It appears there may not even have been an evaluation of it undertaken, as the ACT Government allows Project Wing to self-report and self-assess.

I have heard the noise the drones make and am aware that it has been measured at 80db. It is an excessively loud, high pitched screaming noise which can be heard from all over the suburb and inside people's homes, sometimes waking them up from sleep. This is an appalling and unacceptable situation to inflict on people. People become unwell if they can't control their environments and are constantly subjected to excessively loud noise and intrusion into their lives.

Also the drones have cameras which are constantly recording downwards as they fly at 20 to 30m over people going about their daily lives, as happened to my friends, who feel indignant outrage about it. The public has no idea what happens to the film footage that is constantly being taken of them. I am now aware that it gets sent back to the USA. This also is an outrageous invasion of people's privacy and basic human rights, especially as the people of Bonython were not asked for their permission or

how they felt about it. There is the potential for such breaches of privacy and human rights to be illegal.

CASA has changed the usual Regulations that apply to drones to allow these Project Wing drones to fly within 5 m height and 2 m next to a person, without their permission. This also is unacceptable. It is exposing people to danger.

Drones can be blown by wind very easily on to people/children cars, buildings, power lines (causing bushfires) etc, and should not be allowed to fly so close to people because it is dangerous.

The ACT Government has told people it has no responsibility for the trial and has made no avenue of complaint available. (I am aware that 80% of Bonython residents rejected the drone delivery operation.). They told the many people who complained and have been distressed by it that they can complain to Project Wing.

The ACT Government, CASA, Airservices Australia, The Environment Protection Agency and the Federal Government all tell people that they are not responsible for the noise or privacy aspects of the Project Wing Bonython drone trial. This means that the excessively loud noise of the drones is unregulated, and no one is taking responsibility for the serious violation of people's privacy.

I am also concerned about the impact of the above on vulnerable people, such as the elderly and very ill. I believe the ACT Government is irresponsible and acting without integrity towards its constituents, putting money before people. I do not support the operation of drones over people's homes and in close proximity to them. The current regulations and compliance enforcements are inadequate to keep people safe and it is unconscionable to use people as guinea pigs in an experiment in corporate greed for international recognition.

Thank you for this opportunity to contribute to a significant social issue.

HELEN SCHUMANN
22 February 2019



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 135

Date Authorised for Publication: 27 February 2019

Standing Committee on Economic Development and Tourism

Inquiry into drone delivery systems in the ACT

Submission from:

Dr Sue Meek

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

I wish to object in the strongest possible terms to the implementation of drone delivery systems in the ACT. While I applaud the ACT Government for its proactive and progressive stance with regard to renewable energy, I see no reason for it to be seduced by the implied accolade of drone manufacturers that the ACT would acquire some sort of kudos by becoming early adopters of this invasive, consumption-driven technology.

I concede that there may be some circumstances when drone deliveries may have a valuable contribution to make, particularly with regard to emergency deliveries for life saving or health preserving reasons and perhaps for some limited one off commercial purposes. (I am thinking for example of plumber who never seem to have the right fitting for the repair they have been asked to make being able to make a request for this to be delivered rather than driving to and from the supply point.)

However, where delivery requirements can be foreseen, such as grocery orders, then I believe these should continue to be aggregated and dispatched via optimum transport routes by van or truck. These should be electrically powered as soon as possible – removing the counter-arguments of carbon based fuel burning and noise pollution.

In contrast I contend that no amount of technology development will remove the noise pollution associated with drones and they will invade neighbour's personal space in a way that road deliveries never could due to the overhead hovering required (see also privacy concerns discussion below).

In this context I am particularly appalled by the prospect of 'convenience shopping', such as pizza or coffee deliveries, by drone. I am sure this is very attractive for drone operating companies as it would increase the volume of traffic and improve the economics of their business. Nevertheless, such a substantial imposition on many for the transient gratification of a few is unacceptable and should NOT be permitted.

The widespread use of drones in unpredictable geographic and temporal patterns would be likely to have a devastating effect on wildlife (particularly birds) and be distressing for many, if not all, domestic animals. I have been impressed that parks and wildlife services both here and overseas have recognised their adverse impacts upon environmental protection and people's enjoyment of

these spaces and been quick to ban their use. Urban (human and non-human) inhabitants deserve no less.

Furthermore the fact that drones carry cameras and fly at a much lower levels than satellites raises very significant privacy concerns. Who will have access to the recorded data (which will presumably have to be stored for performance monitoring, proof of delivery etc)? How will it be protected? The potential for intended and unintended surveillance activities and misuse of the data is extremely worrying.

I note that the Inquiry's TOR (b) seeks information on the positive economic impacts of drone delivery technology. Careful consideration should also be given to its disruptive effects. I am confident that far fewer people would work in a drone delivery depot than currently provide courier and delivery services. What price 'efficiency'?

In summary, while there may be a few specific and limited circumstances where drones may be reasonably and valuably deployed their widespread use for commercial deliveries, particularly in domestic situations, is undesirable and unacceptable for the reasons outlined above.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
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Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 136

Date Authorised for Publication: 27 February 2019

VIA E-MAIL:

Standing Committee on Economic Development and Tourism

Email : LACommitteeEDT@parliament.act.gov.au

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

SUBMISSION: INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT

Personal Details:

Name:	CHRISTINE CARDEN
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	[REDACTED]

I would like to make a submission to the above Inquiry.

The huge problems associated with this drone delivery service came to my attention through a longtime friend - known from school days. She is a resident of Bonython and hers and her family's life has been significantly disrupted by the trial.

On the surface this trial could look like another step in using technology for good, or even having a somewhat novelty marketing value. The following problems have been noted:

- Noise Pollution: likened to an F1 racing car flying overhead, with noise levels exceeding EPA limits for community wellbeing. The noise intrusive in everyday lives.
- Birdlife is adversely affected.
- Unscheduled noise shows a disrespect and disdain for the community (Note ACTEW alerts residents to any work /inconvenience.
- As neighbours, we need to let each other know of upcoming loud parties/celebrations.
- Apologies for inconvenience builds understanding and respect. People can tolerate short term noise for good causes - long term noise of delivery drones becomes harassment.
- Ex soldier with PTSD has expressed drones triggering illness due to noise. Again, no scheduling or alerting residents to flight times has shown disregard and insensitivity to community.
- Drones can cause injury/damage/death in unpredictable weather/other conditions.

- There are glaring privacy issues with far reaching effects.

In light of many problems reported by residents about this trial, could the Committee please consider:

- Weight of evidence against continuing drone deliveries
- legislation for use of drones across ACT
- Essential nature of continuing to build a culture of respect across our ACT community.

Thank you for this opportunity to contribute to a significant social issue.

CHRISTINE CARDEN

22/2/19



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 137

Date Authorised for Publication: 27 February 2019

From: [Caro Davidson](#)
To: [LA Committee - EDT](#)
Subject: Inquiry into drone delivery systems in the ACT
Date: Friday, 22 February 2019 7:01:39 PM

Submission from:
Caroline Davidson

[REDACTED]

[REDACTED]

[REDACTED]

I refer to your request for submissions for the inquiry into drone systems in the ACT.

I am concerned about the following statement on the website of Wing Aviation LLC, a company established less than a year ago as a subsidiary of Alphabet, Google's parent company, following a transfer of business from Google:

'Wing is now planning to set up its first ongoing delivery facility in Mitchell, Gungahlin. We are excited to start a new chapter of our journey in Mitchell and look forward to talking to you about what such a drone delivery service might look like here in your neighbourhood. To start, we'll be talking to residents in the suburbs of Franklin, Harrison, Grace, Palmerston and Gungahlin.'

https://wing.com/intl/en_au/australia/mitchell/

The trial has not yet been evaluated, yet Wing Aviation is already building a permanent facility in Mitchell. So much of Canberra's development is now proposed and driven by developers and big business, rather than being carefully researched and considered by the ACT Government before being put out to tender. We are now being bombarded with intrusive buildings and facilities that developers and companies want to sell us, rather than careful proposals that have the best interest of ALL Canberrans at heart. Not just for someone for who is out to make a quick buck.

The company goes on to state that their goal was to radically improving delivery, allowing people to access items when and where they need them, thus living a higher quality of life, with more choice and freedom.

As residents and ratepayers of the ACT, we should have that same entitlement to choice and freedom, including the freedom to choose not to have our privacy and peaceful amenity of our property violated by intrusive, noisy drones.

regards

Caroline Davidson



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 138

Date Authorised for Publication: 27 February 2019

From: [Ryan Donnelly](#)
To: [LA Committee - EDT](#)
Subject: Drone delivery in Bonython
Date: Thursday, 21 February 2019 4:56:26 PM

To whom it may concern,

I was part of the drone delivery trial in Bonython and feel the negative opinions is coming from a very vocal minority.

You can not hear the drones when you are inside your house, more noise comes from the Tuggeranong parkway, lawnmowers and party's on the weekends going into the early hours, Not to mention the burnouts!

We have not lost any wildlife in my yard and we were having deliveries, my dog and cat were not even affected by the noise of a drone for around 20 seconds per delivery.

Wing provided plenty of information before, during and after the trial with letter drops, visiting the local school and emails. I had nothing but a positive experience.

I hope the positive experiences don't fall on deaf ears.

Thank you for your time.

Kind Regards,
Ryan



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 139

Date Authorised for Publication: 27 February 2019

Drone Trials

The Bonython trial has highlighted a number of issues which do not appear to have been addressed before proposing an extended roll out of this type of drone use.

Support use of drone technology for emergency / health related deliveries by regulated public agencies such as hospital pharmacies or regulated remote area commercial / government delivery where alternate delivery systems are not feasible.

Support use of drone technology for on site building / infrastructure inspections and the like especially where this reduces risk to contractors working on site when there is a licensed operator on site.

Support use of drones for environmental monitoring and mapping where this is a regulated activity undertaken by a licensed operator with notification of activity and purpose, and ideally permission, from of all landholders over whose land the drone will be operating.

There is no doubt that new technologies such as drones will have a positive role to play in our future economy where used to enhance our current capacity for things like inspections, surveying and mapping, remote area delivery or aerial robotics for maintenance and repairs.... These kind of uses are likely to have broad social licence / support provided there is adequate safety regulation and monitoring, and protection of privacy of individuals and corporate IP of organisations. However the use in the suburban areas of a city for discretionary consumption driven use is more complex due to potential conflicts.

Concern is that a large area of expansion has been proposed for drone use for delivery of day to day consumables or parcels in city / suburban areas without resolution of the following issues.

Visual privacy for residents and potential for data capture and sale by drone operators.

Cameras are used for navigation with potential intrusion into privacy and misuse of data. Once there are an extended number privately operated commercial drones doing deliveries in the environment it will become harder to monitor the presence of other drone use / misuse and it can be anticipated pressure will increase for data collection uses. What is acceptable to the community needs to be defined now - a proactive system of regulation that demonstrably has resourcing to be implemented should be in place as we expand use of drones generally but particularly for a use that could generate significant volumes of traffic.

Noise related disturbance of neighbours

Noise has been reported as a significant issue for a number of Bonython residents notwithstanding satisfaction of delivery users. Societal expectations around rights to quiet enjoyment of one's residence are embodied in noise control and tenancy legislation and a noise which is penetrating and disruptive should not be permitted. This may be an issue of technology development but should be a barrier to use in residential areas the manner proposed until this is resolved.

Disturbance of wildlife

As climate change progresses as well as rethinking agriculture and land use more broadly we should be thinking about our cities as the "reefs " of the land – complex ecosystems built by humans with multiple niches for wildlife and a broad diversity of flora and fauna to inhabit . Our wellbeing will depend on our capacity to create niches for other living things given the levels of biodiversity loss

already being documented. Canberra's birdlife is a key part of this ecosystem and their, or indeed other wildlife's, capacity to occupy niches within the suburbs should be prioritised over use of drones for deliveries where these create disturbance and stress and displacement of animals. Was there, as part of the Bonython trial, a scientifically based study by an independent group such as ACT Parks and Wildlife that measured birdlife presence before and during, and observed and recorded what caused the distress – noise, and / or large hovering winged "predator", collision. Does it support or contradict the anecdotal evidence from residents of significant degrading of the habitat for birds and loss of birds from the area was seen? If evidence contradicting the anecdotal reports has not been done this type of study should be done in a limited area before extensive use of the technology is proposed.

Other issues

Use / Misuse Causing Disruption of other priority activities

General concern re use of drones creating a significant hazard due to flight of drones into areas where emergency operations are occurring or in the case of misuse regular operations such as airports. Systems / protocols for managing commercial drone around areas where there are emergency response activities occurring should be required prior to deployment and monitoring that would allow identification of operators so they can be contacted as needed.

Potential for failure or collision

The use of drones in the manner suggested needs to be regulated and monitored as unless the government is proposing that only one commercial venture would benefit from this trial there will be multiple operators who will not necessarily know where each others drones are with an obvious potential for collision. Similarly if these drones run on a gps or wireless technology and there is a network failure the failsafe needs to be minimum risk for impact at ground level and insurances on operators to cover any damage / injury (at a cost that reflects the risk).

Economic benefit

Much is made of the benefits re employment however while everyone talks about jobs gained they do not talk about jobs lost or services lost due to automation / technology change. The potential job losses in this instance as a guess include are café waiters, baristas, delivery drivers, etc. These jobs all involve some level of person to person contact and provide entry points into employment for a number of people and their loss may not be great for the community in the long run. In addition it is obviously in commercial interest to minimise labour use in delivery so the process is likely to become more and more automated. The definition of benefits need more nuanced analysis before social licence for this consumption led type of use is assumed when there may be many other pathways to economically benefitting from the new technologies being developed in Canberra.

A desirable outcome of the committee process would be development of strategy for addressing these issues to be implemented ahead of these trials and then monitored for effectiveness and improved. Innovation in regulation that parallels beneficial use of new technology will also be highly desirable expertise beyond Canberra.



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 140

Date Authorised for Publication: 27 February 2019

From: [John G](#)
To: [LA Committee - EDT](#)
Subject: Input to Drone Inquiry
Date: Friday, 22 February 2019 8:09:54 PM

I am opposed to the introduction of generalised drone deliveries in Canberra.

They would serve no valid community purpose, further undermine Canberra's small businesses in local shopping centres, and further degrade Canberra's unique "bush capital" appeal, including for tourists.

Is there a need for a drone delivery service, and who would benefit?

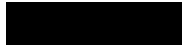
The provider would make money but that is not a sufficient justification when set against environmental and lifestyle gradation.

The homebound? - would people with mobility issues be able generally and safely to access drone-delivered supplies? Other, better forms of assistance for the homebound are readily available.

Yuppies craving an inner-city lifestyle and unwilling to make the effort to go to the local shops? - no comment/ see above.

I live in Hughes and regularly hear the Canberra Hospital helicopter flying low overhead. Does it disturb my peace and quiet? - Yes - but what reasonable, compassionate person could object to this useful/vital and humane community service? I don't. But drones are not in that category.

John Griffin





LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 141

Date Authorised for Publication: 27 February 2019

From: [Donna Ross](#)
To: [LA Committee - EDT](#)
Subject: Input to Drone Inquiry
Date: Saturday, 23 February 2019 1:17:03 PM

I am opposed to the introduction of generalised drone deliveries in Canberra.

They would serve no valid community purpose, further undermine Canberra's small businesses in local shopping centres, and further degrade Canberra's unique "bush capital" appeal, including for tourists.

Is there a need for a drone delivery service, and who would benefit?

The provider would make money but that is not a sufficient justification when set against environmental and lifestyle gradation.

The homebound? - would people with mobility issues be able generally and safely to access drone-delivered supplies? Other, better forms of assistance for the homebound are readily available.

Yuppies craving an inner-city lifestyle and unwilling to make the effort to go to the local shops? - no comment/ see above.

I live in Hughes and regularly hear the Canberra Hospital helicopter flying low overhead. Does it disturb my peace and quiet? - Yes - but what reasonable, compassionate person could object to this useful/vital and humane community service? I don't. But drones are not in that category.

Madonna Griffin





LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 142

Date Authorised for Publication: 27 February 2019

From: [Pam Rutland](#)
To: [LA Committee - EDT](#)
Subject: DRONE ENQUIRY SUBMISSION
Date: Friday, 22 February 2019 5:46:36 PM

Introduction of Drones will be the Introduction of Invasion of Privacy with no safeguards possible.

Not possible to monitor drones in residential airspace once drone delivery, or any commercial use is permitted.

Noise level higher than predicted, indicating that even in a specific control project specified levels were not attainable.

Mental health issues - residents of Bonython suffered stress from noise and constant intrusion into the airspace around them

Bonython trial indicated stress on domestic animals - effects on wildlife are therefore likely. No tests done.

P. Rutland

Constant unexpected distraction for cyclists, pedestrians and drivers.

Will become used by any organisation wishing to deliver packages, therefore causing high volume usage causing danger to public health and wellbeing



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 143

Date Authorised for Publication: 27 February 2019

From: [Luke Lake](#)
To: [LA Committee - EDT](#)
Subject: Re: Submission to drone inquiry [SEC=UNCLASSIFIED]
Date: Sunday, 24 February 2019 5:31:45 PM

Ta

Submission on the impact of drones.

Airspace usage is divided into 3 types. Military , civilian and commercial.

If google are granted approval to operate their drones there will be a 4th airspace , google airspace

Google will have exclusive rights to operate in the space. This is determinental :

It allows google to record personal data that is not possible from larger distances. Objects such as the type of tyres on our cars, movements between our home and going out, types of windowes, curtains, paint on alcoves, alarm systems

This allows what data mining can't. Verify the real world against the data in the database. Questions such as 'what colour paint is popular in the suburb? Out data says blue but it is brown'

Google space should be thought of as google box except its above your house.

Ta

Luke Lake

[REDACTED]

[REDACTED]

> On 24 Feb 2019, at 12:49 pm, LA Committee - EDT <LACommitteeEDT@parliament.act.gov.au> wrote:

>

> Dear Mr Lake,

>

> While the submission closing date has passed in my experience committees are happy to receive late submissions so long as they arrive a few days prior to the beginning of public hearings (currently scheduled for 6 March).

>

> Kind Regards

>

>

>

> Hamish Finlay

> Manager

> Committee Support Office

> P 02 62050129 | E hamish.finlay@parliament.act.gov.au

>

>

> www.parliament.act.gov.au

>

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> -----Original Message-----

> From: Luke Lake [REDACTED]

> Sent: Friday, 22 February 2019 6:09 PM

> To: LA Committee - EDT <LACommitteeEDT@parliament.act.gov.au>

> Subject: Submission to drone inquiry

>

>

> Hi

>

> Is it still possible to make a submission to the drone enquiry please?

>

> Ta

>

[REDACTED]

>

> Sent from my iPhone

> -----

> This email, and any attachments, may be confidential and also privileged. If you are not the intended recipient, please notify the sender and delete all copies of this transmission along with any attachments immediately. You should not copy or use it for any purpose, nor disclose its contents to any other person.

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LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 144

Date Authorised for Publication: 27 February 2019



Gungahlin Community Council Inc.
PO Box 260 Gungahlin ACT 2912

The Secretary
Standing Committee on Economic Development and Tourism
Inquiry into Drone Delivery Systems in the ACT
ACT Legislative Assembly
CANBERRA ACT 2601

LACommitteeEDT@parliament.act.gov.au

Submission on the Inquiry into the Drone Delivery System in the ACT

The Gungahlin Community Council (GCC) welcomes the opportunity to provide a submission to the Standing Committee on Economic Development and Tourism (the Committee) on Drone Delivery Systems in the ACT.

As the Committee will be aware, the Gungahlin area is where the Project Wing drone delivery system will be deployed on an ongoing basis for the first time from a base located in Mitchell¹. The involvement of the Gungahlin community in a proactive and responsive manner must be a critical element of the ACT Government's response to this inquiry. Further, the ACT Government must also work with the relevant Federal agencies to ensure a consistent, transparent and robust regulatory framework is developed with enough flexibility that it can address the specific issues identified in the trials conducted to date², as well as any further issues, or any opportunities, that arise as part of the ongoing operations.

The GCC, and the Gungahlin community, have extremely limited direct experience and/or understanding of the nature of the drone delivery systems. However, in addition to reviewing the extensive media coverage, the GCC has facilitated briefings at their public meetings from both Project Wing and Bonython Against Drones, as well as undertaking site visits to the Project Wing Bonython trial site, to build a level of understanding of the relevant issues. It is clear from these engagements that this new technology-facilitated capability has emerged without the regulatory controls necessary to ensure that the beneficiaries and consumers of the service, and the concerns of the rest of the community are balanced. Nevertheless, early feedback from the Gungahlin community has indicated that a majority of residents view drone delivery systems positively.

Regarding the terms of reference:

(a) the decision to base the trials of the technology in the ACT and surrounding region;

The GCC encourages the development of any employment or business opportunity within the Gungahlin region that brings value to the Gungahlin community; but this value must be balanced against the impact to the broader community. As noted below, the mechanisms provided by the ACT and Federal governments have made it very difficult for the community to engage with the process of determining this balance.

¹ https://wing.com/intl/en_au/australia/mitchell/ - "We

're going to open our first ongoing delivery facility in Mitchell in the coming months, and we plan to service the neighborhoods of Franklin, Harrison, Gungahlin, Crace and Palmerston."

² <https://bonythonagainstdrones.com/issues/>

The GCC would be keen for the inquiry, and the ACT government, to engage with the drone delivery system industry, rather than specific vendors, and for those engagements to be undertaken in an open and transparent manner.

(b) the economic impact of drone delivery technology being tested in the ACT

The GCC would also ask the inquiry to consider the impact, both positive and negative, of drone delivery systems on existing businesses and employment, particularly in the area of operations, ie. Mitchell-Gungahlin.

c) the extent of regulatory oversight of drone technology at various levels of government

Given the extremely early state of drone delivery systems, it is hardly surprising that the regulatory oversight of this industry is (at best) embryonic. All the trials conducted to date have been based on exemptions or variations to existing regulations from some agencies, and there is clearly no “joined up” consistent, transparent and agreed approach between the multiple Commonwealth and state (ACT) agencies that have responsibility for the various aspects of how these services are controlled/managed. With the transition to “ongoing” services, this is now urgent and minimally the ACT government should establish a single point of contact to take on this task, and most importantly, for the community to engage with. It is not acceptable for the operators of drone delivery systems to be the only point of contact for community concerns or issues (as was the case during the trials).

(d) the extent of any environmental impact as a result of trialling drone delivery technology on:

Addressing the environmental impact particularly regarding noise, wildlife, and pets appears to be the major issue arising from the drone delivery system trials. Much greater effort needs to be made by the ACT government to establish a process to bring the (many) government agencies and community stakeholders together to develop a cohesive strategy to enable the community to have their input.

(e) ways to improve the use of drone delivery technology within the ACT;

See responses to c) and d) above

(f) any other relevant matter; and

None.

(g) information privacy;

The GCC has no comment on this topic.

Yours Sincerely

A handwritten signature in black ink that reads "Peter Elford". The signature is written in a cursive, flowing style.

Peter Elford, President, GCC



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 145

Date Authorised for Publication: 27 February 2019

From: [Aanika Shah](#)
To: [LA Committee - EDT](#)
Subject: Inquiry into Drones
Date: Thursday, 21 February 2019 11:20:54 PM

To whom it may concern,

My name is Aanika Shah, I am writing to to you today to share some positive feedback in regards to the 2018 - early 2019 drone trials in the Bonython region.

But first some background information about myself, [REDACTED]

[REDACTED] have been residing at my parents house in Bonython with my younger brother (the address where many drone deliveries took place). So a house literally full of people and different lifestyles.

To say that the drones were a game changer for our household would not even begin to give enough credit to how helpful they had become as an integral part of our day. As a stay at home mum to 2 young children, trying to finish her uni education as well as start up a business - it was one less thing I had to worry about if I was running behind on something.

A couple of examples -

We were about to head out for a birthday party in one of those 39 degree days we just had - I was already running minutes late when I noticed I didn't have any sunscreen for the kids. I quickly hopped on the Wing app and ordered some sunscreen (and while I was at it a coffee for myself) and by the time I had loaded the kids in the car - there it was my drone delivery waiting for my on my drive way arriving within 4mins.

Many more examples of this - forgot to buy bread last night for breakfast, the drone had it to me within a few minutes

Im sick at home alone with the kids and can't get out, I need cough lollies and sudafed, I didnt even have to stress about it, the drone had it covered.

I know the coffee and lunch is their biggest selling point, (and it was definitely where I used it most - for unexpected guests aswell) but just having a plan B for emergency situations was the absolute best.

I know there has been a lot complaints about the noise, but honestly I don't even see why, the only time I can hear them is when a delivery is at my doorstep or the next doors and I can tell you we have much more of an issue with the dogs barking through odd hours of the night and day especially with the children napping.

Just to summarise the Wing X drone delivery has been nothing more than helpful, it is such a positive advancement for Australia into it's step into the technology era. There is so much negative stigma attached to anything that is different or new that sometimes due to that we overlook something that could be so useful if everyone was just willing to give it a go. I would very much love for the drones to come back to Bonython, honestly the customer service was impeccable, quality was of the highest standards and caffeine to your door, now who doesn't love that.

Aanika



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 146

Date Authorised for Publication: 6 March 2019



Environmental Defenders' Office
AUSTRALIAN CAPITAL TERRITORY

Standing Committee on Economic Development and Tourism
GPO Box 1020
London Circuit
Canberra
ACT 2601

25 February 2019

By email: LACommitteeEDT@parliament.act.gov.au

Dear Committee Secretary,

Inquiry into drone delivery systems in the ACT: Environmental Defenders Office ACT Submission

The Environmental Defender's Office (ACT) Inc ('EDO ACT') is a community legal centre specialising in public interest environmental law in the ACT and surrounds. We provide legal representation and advice, take an active role in environmental policy and law reform, and develop community legal education programs and resources.

The EDO ACT received a number of enquiries regarding drone trials in the ACT, and welcomes the opportunity to briefly comment on past and future drone delivery trials and systems in the ACT where it relates to potential impacts to the environment and access to justice.

ToR 1(c) The extent of regulatory oversight of drone technology at various levels of government.

The recent drone delivery trial highlights a gap in legislative frameworks regulating the operation of drone technology in the ACT, including identification of the appropriate regulatory body to receive and action complaints. For example, the trial identified that there was no clear regulatory body responsible for monitoring and enforcing noise pollution. Confusion arose as to whether Access Canberra, the Civil Aviation Safety Authority (CASA), or Airservices Australia were the appropriate bodies to refer complaints to. The *Environmental Protection Act 1997* (ACT) does not apply to Commonwealth jurisdiction aircraft within the meaning of the *Air Services Act 1995* (Cth) ([section 8\(1\)\(b\) Environment Protection Act \(ACT\)](#)). CASA has stated that "as the safety regulator, the issue of aircraft (drone) noise is not in our remit."¹ Airservices Australia has no powers to restrict aircraft flights (including drones) outside controlled airspace, has no regulatory power to establish maximum noise levels or

¹ <https://www.casa.gov.au/aircraft/standard-page/trial-drone-delivery-systems>



Environmental Defenders' Office
AUSTRALIAN CAPITAL TERRITORY

enforce compliance related to aircraft noise, including from the drone delivery system trial, and there are no federal noise regulations in relation to drones. A clear legislative regime must be established to deal with compliance and enforcement for any future drone delivery trials and for a potential drone delivery system in the future.

Recommendation: A clear and accessible legislative framework be established, with a compliance and enforcement included, particularly for noise concerns.

ToR 1 (d) the extent of any environmental impact as a result of trialling drone delivery technology on:

... (ii) native wildlife; ...

The EDO ACT welcomes the potential for reduced greenhouse gas emissions through the use of drones as delivery systems in the ACT. However, a thorough assessment of the impacts of drones on biodiversity is necessary before any conclusions are drawn on the benefits and costs of such a delivery system. It is noted that the report prepared by AlphaBeta for Wings does not discuss impacts on biodiversity, nor does there appear to be a publicly available environmental assessment relevant to the trial. A trial of this kind must include an assessment of all impacts – positive and negative – in order to determine whether to proceed with a drone delivery system in the ACT. As the 'bush capital', the ACT is home to many species of birds – and research is developing with respect to the impacts of drone on avian activity.² Community members and groups are often best placed to provide accurate information on changes to their environment, and residents have reported changes in wildlife behaviour. Future trials must include the establishment of appropriate baseline studies that assist in monitoring the impacts of biodiversity as a result of providing this service. An environmental assessment must be produced in conclusion of the trial.

Recommendation: The environmental impact of drone delivery systems must be assessed, and environmental impacts should be included as a term of reference in measuring the outcomes of future drone delivery system use.

² Lyons, M., Brandis, K., Callaghan, C., McCann, J., Mills, C., Ryall, S. and Kingsford, R., 2017. Bird interactions with drones, from individuals to large colonies. BioRxiv, p.109926. See https://www.ecosystem.unsw.edu.au/files/Lyons_et_al-2018-Bird%20interactions%20with%20drones.pdf



Environmental Defenders' Office
AUSTRALIAN CAPITAL TERRITORY

Finally, the precautionary principle is a well-recognised principle in ACT law,³ and is derived from national and international environmental law.⁴ The Australian Panel of Experts on Environmental Law define the precautionary principle as follows:

The precautionary principle requires that where there are threats of serious or irreversible damage to the environment, lack of full scientific certainty shall not be used as a reason for postponing measures to prevent environmental degradation.⁵

The precautionary principle is a 'directing principle', meaning that decision-makers need to take it into account when creating policies, including decisions regarding drone delivery systems in the ACT. Concerns raised regarding the previous drone trial and the use of this technology into the future involve the untested and experimental nature of the new technology, and the lack of regulation with respect to it. Until an appropriate legislative framework is in place, and a greater understanding of the impacts of drone delivery services in the ACT, it is prudent to take a precautionary approach to drone use in the ACT.

If you have any questions or wish to clarify any of the above, please do not hesitate to contact the EDO ACT on (02) 6243 3460 or Stephanie.Booker@edoact.org.au.

Yours faithfully,

Stephanie Booker
Principal Legal Officer

³ Section 3D *Environment Protection Act 1997* (ACT); section 9 *Planning and Development Act 2007* (ACT); section 6 *Nature Conservation Act 2014* (ACT).

⁴ *Report of the United Nations Conference on Environment and Development (Rio Declaration)* UN Doc A/CONF.151/26 (1992), Principle 15.

⁵ Australian Panel of Experts on Environmental Law, *The Foundations of Environmental Law: Goals, Objects, Principles and Norms* (Technical Paper 1, 2017).



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 147

Date Authorised for Publication: 6 March 2019

Standing Committee on Economic Development and Tourism

Submission: Inquiry into Drone delivery system in the ACT

20-2-2019

Personal details:

Please note: I would like my personal details to remain anonymous please.

Name	[REDACTED]
Postal Address	[REDACTED]
Phone	[REDACTED]
Email	[REDACTED]

Optional

How long have you lived in the area?	I have lived in Bonython for 24 years
--------------------------------------	---------------------------------------

To the Standing Committee on Economic Development and Tourism,

Thank you for allowing residents to give feedback about the Drone delivery trial in Bonython.

I would like to comment on the following terms of reference:

- a) The decision to base the trials of the technology in the ACT and surrounding region
- b) The economic impact of drone delivery technology being tested in the ACT including the: investment that has been brought into the Territory
- d) The extent of any environmental impact as a result of trialling drone delivery technology on
- f) Any other relevant matter
- g) Information privacy

Comments on the terms of reference.

a) The decision to base the trials of the technology in the ACT and surrounding region

- ♦ I have seen footage of drones being used in situations that could cause risk of injury to humans. For example: surveying flood damage, roofs, earthquake damage, and power lines. I think the use of drones in extreme and dangerous circumstances is a good idea.
- ♦ When I received the notification of the drone trial in my letter box I felt a sense of betrayal that we – residents – had not been asked what we thought and felt about the trial. My first thought was “Oh no, there goes our lovely peaceful neighbourhood”. I was also surprised that such a trial was to take place in our ‘Garden city’, considering much is made of the natural environment, nature parks and wildlife.
- ♦ In *Canberra’s living infrastructure information paper*, Feb 2018, it states that, “The anticipated beneficial outcomes include: enhancing liveability and social inclusion; enabling urban renewal and active living; increasing property values; and improving natural resource management and urban biodiversity. The introduction of the drone trial put the beneficial outcomes of having an infrastructure plan at risk. If drones are allowed to operate in our city the benefits of having a ‘Living infrastructure’ would dwindle away.
- ♦ Also from the ACT Government, ‘Our Canberra page’ titled, ‘Canberra named a top 10 city to visit in 2018 by Lonely Planet’, it states, “*With endless family-friendly and adventurous activities, opportunities to connect with nature...*” The introduction of the drone trial also put the claim of having ‘family friendly and adventurous activities’ in jeopardy due to the lack of privacy and distressing level of noise created by the drones.

c) The economic impact of drone delivery technology being tested in the ACT including the:

(i) investment that has been brought into the territory

I understand the need for the Territory to attract investment and business opportunities so our economy can thrive and benefit those of us who live and work here. However I am not prepared to sacrifice my quality of life in order to attract such investments. Canberran’s quality of life also includes the amenity of peaceful suburbs, privacy, abundant wildlife and safety. Canberra is a fabulous city and many people are amazed at how much they enjoy the slower pace and ‘country city’ feel, with its nature parks and abundant wildlife, as well as modern amenities and a growing ‘cafe culture’. This would be severely compromised if drones were allowed to operate in our suburbs and over nature reserves.

d) The extent of any environmental impact as a result of trialling drone delivery technology on:

(i) residents within the trial area

I initially was prepared to accept the trial as necessary and potentially useful. However having experienced drones up close, I am opposed to their use in suburban or recreational areas, due to the following experiences and concerns.

Noise

- ♦ On first hearing a drone I was initially frightened. I was inside my house at the time. I had no idea what the noise was and I experienced feelings of distress and fear as I tried to locate what was causing the noise. My full attention was focussed on trying to work out what the noise was, and if it was a threat. I went outside and located the drone above a neighbours' house.
- ♦ I was astounded and dismayed at the noise produced by the drone. The noise was of such a frequency that I could not stay outside while it was nearby. Once inside my house I tried to block my ears to keep out the noise. Unfortunately this did not work and I felt very distressed. I experienced a 'flight or fight' or 'stress' response: increased heart rate, increased respiration rate, and anxiety.
- ♦ Our house has double glazing and the noise from the drone carried right inside the house. We had to shut the doors and windows to try and reduce the noise level. It was difficult to continue having a conversation without raising my voice to be heard and I had to strain to hear others talking.
- ♦ Because of the noise we were unable to garden, entertain or relax in my home and yard. I became extremely angry about the erosion of our ability to be able to experience relaxation and peace, enjoy the fine weather and entertain.

Danger

- ♦ Driver distraction: As I was leaving home one morning a drone came into my field of view. As it was not behaving like a bird and was accompanied by an extremely ear piercing noise, I found myself slowing down to locate the drone. I was asking myself, "Where is it?", "Is it close?", "Will it hit me?", "Will I hit it?" I found it extremely distracting and thought it was a huge risk to us as drivers. I also consider this to be a risk to cyclists, motorcyclists, and pedestrians.

Privacy

- ♦ I also found I felt threatened by the drone. I felt I was being spied upon. I was reluctant to be outside because I may have been on camera. I also felt that I had lost the privacy of my own home and that my security was now at risk because of the possibility of being seen on the camera.

- ♦ Pine Island: On a lovely Saturday I took myself for a walk around Stranger Pond towards Pine Island. I was enjoying the peace and quiet and I became aware of the high pitched noise of a drone. Suddenly it appeared above the trees and passed overhead. I had to stop and block my ears in an attempt to gain relief from the noise. It was extremely distressing being subjected to the noise. The birds on Stranger Pond all took off as the drone approached.
- ♦ After a few weeks of the trial, I noticed that I was feeling quite anxious and angry when I heard the initial noise of an approaching drone. I became super attuned to it because it was such an unpleasant, invasive noise. I felt extremely angry that I was being subjected to such a distressing noise and that it was affecting my rest, relaxation and socialisation.

(ii) native wildlife

- ♦ Early on in the trial I was outside and heard a drone approaching. As it flew near to my neighbour's house I saw two magpie larks swooping the drone. I was concerned that they may have been injured by the rotors and that the constant invasion of their territory at nesting time would cause them to abandon their nest.
- ♦ As the weeks progressed I noticed there were not as many birds as usual. I did not notice the usual magpies, currawongs, parrots, wattle birds, coels, small birds, indian minor birds or black birds. I began to wonder if I had imagined a reduction in the bird numbers, however, within about a week of the trial ending I noticed that magpies, parrots, cockatoos, wattle birds, black birds and coels were back!

(iii) domestic animals

- ♦ Every time a drone flew nearby, our neighbours dogs began barking and only quietened down some time after the drone was well out of my hearing range.

f) any other relevant matter

Regulation

- ♦ The CASA website states: "You must not fly your drone in a way that creates a hazard to another aircraft, person or property, so follow our rules every time you fly", and, "You must not fly your drone within 30 metres of people, unless the other person is part of controlling or navigating the drone". Flying drones near people is hazardous and I wonder why regulations that are meant to protect us are not enforced for commercial use of drones?
- ♦ I attempted to follow the links on the CASA web site to obtain information about potential exemptions to the above regulation but after many attempts and following references to yet another regulation, I was not able to find answers.

My questions are:

1. What regulations apply to the commercial operation of drones in built up areas, flying over people's homes and in urban parks and nature reserves?
2. What protection do Canberran's have in regard to the invasion of privacy, noise and danger the drones pose?

Privacy

The Universal Declaration of Human Rights, states:

- ♦ Article 12, "No one shall be subject to arbitrary interference with his privacy, family home or correspondence, nor to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or attacks".

I found the presence of the Wing drone (and any other drone in my vicinity) to be a violation of my right to privacy. I did not feel safe, the privacy of my home was threatened and I felt spied upon.

- ♦ Article 24, "Everyone has the right to rest and leisure, including reasonable limitation of working hours and periodic holidays". I believe the flying of drones near my house and in my suburb has removed my right to rest and leisure due to the noise, risk of injury and being filmed.

The Convention on the Rights of the Child, fact sheet states:

- ♦ Article 3, "The best interests of children must be the primary concern in making decisions that may affect them. All adults should do what is best for children. When adults make decisions, they should think about how their decisions will affect children. This particularly applies to budget, policy and law makers".

I do not think the best interests of children have been considered in allowing the drone trial or contemplating introducing them on a permanent basis. This is because drones pose a risk of injury, they subject children to unacceptable noise levels outside and inside their homes and they compromise children's privacy.

- ♦ Article 16, "Children have a right to privacy. The law should protect them from attacks against their way of life, their good name, their families and their homes". Children's privacy is threatened by drones flying near them or their homes. The noise will prevent them from being outside and may cause extreme distress.
- ♦ Article 19, "Children have the right to be protected from being hurt and mistreated, physically or mentally..."

I believe the safety of children is put at risk as a consequence of injury from a drone, and from the emotional distress experienced as a result of the noise the drone makes. Children may become frightened of the noise and the drone, and may suffer PTSD like symptoms. For example, my child became

terrified of aeroplanes flying over our house during an Air force exercise in Darwin. The effect of the noise seemed to build up after repeated exposure to such an unpleasant loud noise. I am concerned that not being able to escape the noise of a drone could cause trauma to children.

- ♦ Article 31. "Children have the right to relax and play, and to join in a wide range of cultural, artistic and other recreational activities.

Children may not be able to play outside due to the invasion of their privacy and the extreme noise produced by the drones. For example: if taking part in sport, bicycle riding, skate board riding, outings with family or friends in parks or homes, they are subjected to risk of injury, noise and being filmed.

g) Information Privacy

I have concerns about the privacy of my information and what may be gathered by a drone. My questions are:

- ♦ Who is directing the drone and what happens to the camera footage?
- ♦ What regulations are in place to prevent footage taken by a drone being sold onto another party or used to cause me harm or bombard me with unsolicited advertising?
- ♦ What regulations are in place to prevent attacks upon my honour and reputation by a malicious entity that may acquire film footage of my home or me?

Thank you for taking the time to read my submission.

References

ACT Government, *Canberra's living infrastructure information paper*, Feb 2018, <https://www.environment.act.gov.au/_data/assets/pdf_file/0011/1170965/Canberra-Living-Infrastructure-Information-paper-2018.pdf> <viewed 20 Feb 2019>

ACT Government, *Our Canberra*, 29 Feb 2019, <<https://www.act.gov.au/our-canberra/latest-news/2017/october-2017/canberra-named-a-top-ten-city-to-visit-in-2018-by-lonely-planet>> <viewed 20 Feb 2019>

UNICEF, *Fact sheet: a summary of the rights under the convention on the Rights of the Child*, https://www.unicef.org/crc/files/Rights_overview.pdf, <viewed 20 Feb 2019>

United Nations, *Universal Declaration of Human Rights*, <http://www.un.org/en/universal-declaration-human-rights/> <viewed 20-Feb 2019>



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 148

Date Authorised for Publication: 6 March 2019

VIA E-MAIL:

Standing Committee on Economic Development and Tourism

Email : LACommitteeEDT@parliament.act.gov.au

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

SUBMISSION: INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT

Personal Details:

Name:	
Postal Address:	
Phone:	
Email: (if applicable)	

Please note, I would like my submission to remain anonymous. ✓ 

i would like to make a submission to the above Inquiry.

I am aware of the drone delivery trial that has been taking place in the ACT suburb of Bonython, by the American Google company Project Wing since July 2018.

I know people who live in Bonython who have been directly impacted by it. I have seen and heard videos of the drones as they fly over people's backyards and deliver goods. I am aware that their lives, the sanctity of their homes and amenity have been severely intruded upon for 6 months and that they are outraged and very angry and upset about this.

I am shocked that the ACT Government would instigate such a trial to be conducted in the Australian Capital Territory. I am aware there is talk by the operator, Project Wing, of expanded operations early this year when no results of the Bonython trial have been made available to the public. It appears there may not even have been an evaluation of it undertaken, as the ACT Government allows Project Wing to self-report and self-assess.

I have heard the noise the drones make and am aware that it has been measured at 80db. It is an excessively loud, high pitched screaming noise which can be heard from all over the suburb and inside people's homes, sometimes waking them up from sleep. This is an appalling and unacceptable situation to inflict on people. People become unwell if they can't control their environments and are constantly subjected to excessively loud noise and intrusion into their lives.

Also the drones have cameras which are constantly recording downwards as they fly at 20 to 30m over people going about their daily lives, as happened to my friends, who feel indignant outrage about it. The public has no idea what happens to the film footage that is constantly being taken of them. I am now aware that it gets sent back to the USA. This also is an outrageous invasion of people's privacy and basic human rights, especially as the people of Bonython were not asked for their permission or

how they felt about it. There is the potential for such breaches of privacy and human rights to be illegal.

CASA has changed the usual Regulations that apply to drones to allow these Project Wing drones to fly within 5 m height and 2 m next to a person, without their permission. This also is unacceptable. It is exposing people to danger.

Drones can be blown by wind very easily on to people/children cars, buildings, power lines (causing bushfires) etc, and should not be allowed to fly so close to people because it is dangerous.

The ACT Government has told people it has no responsibility for the trial and has made no avenue of complaint available. (I am aware that 80% of Bonython residents rejected the drone delivery operation.). They told the many people who complained and have been distressed by it that they can complain to Project Wing.

The ACT Government, CASA, Airservices Australia, The Environment Protection Agency and the Federal Government all tell people that they are not responsible for the noise or privacy aspects of the Project Wing Bonython drone trial. This means that the excessively loud noise of the drones is unregulated, and no one is taking responsibility for the serious violation of people's privacy.

I am also concerned about the impact of the above on vulnerable people, such as the elderly and very ill. I believe the ACT Government is irresponsible and acting without integrity towards its constituents, putting money before people. I do not support the operation of drones over people's homes and in close proximity to them. The current regulations and compliance enforcements are inadequate to keep people safe and it is unconscionable to use people as guinea pigs in an experiment in corporate greed for international recognition.

Thank you for this opportunity to contribute to a significant social issue.

NAME

18 February 2019





LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 149

Date Authorised for Publication: 13 March 2019

VIA E-MAIL:

Standing Committee on Economic Development and Tourism

Email : LACommitteeEDT@parliament.act.gov.au

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM

SUBMISSION TO INQUIRY INTO DRONE DELIVERY SYSTEMS IN THE ACT

Personal Details:

Name:	MARK. E. BROWNE
Postal Address:	[REDACTED]
Phone:	[REDACTED]
Email: (if applicable)	[REDACTED]

The Committee Secretary

Dear Sir,

I am pleased to have this opportunity to make a submission to the above Inquiry.

I have seen (and heard!) video footage of the Project Wing drones delivering to a house in Bonython and the noise is absolutely horrendous. I am told it has been measured at 80db at a fence boundary. I am aware that the EPA limit for residential noise is 45db.

How can this be allowed? It doesn't make sense. Something is terribly wrong about the whole Project Wing drone operation.

My sister and her family have had to endure drones low-flying over their home since September 2018, sometimes 40 times in one day!

This is a plainly absurd and unacceptable situation. The noise of the drones is high-pitched like an F1 racing car. I know their lives have been significantly disrupted by it and they are angry and outraged - and rightly so - as am I - for the fact that they have been subjected to such a violation of their basic human rights.

They are also outraged, and so am I, that the drones have cameras onboard, constantly recording everything below them.. There are no privacy laws to protect the Bonython residents whose privacy has been rudely violated by the drone operations.. No one knows what happens to the film footage taken of them. This is unacceptable and should be illegal.

I am also aware that the ACT Government did not consult people before the trial, there is no formal avenue for complaint, the noise and privacy issues are unregulated and that CASA has made an Exemption to Project Wing so that they can operate within 5m height and 2 metres lateral distance

from a person, without their permission, instead of the usual distance of 30 metres that applies to all other drone operators in Australia.

This exposes Bonython residents to all the risks identified by the ACT Government and CASA and now public in FOI documents. These drones can be blown on to people, moving cars and infrastructure such as power lines (potential for catastrophe including bushfires) in unforeseen circumstances, which are always a possibility.

The ACT Government is clearly putting money before people, especially their safety, health and wellbeing. I am aware that there are serious gaps in regulations, controls, compliance enforcement and feedback mechanisms in the conduct and management of this trial by the ACT Government.

The ACT Government has blithely ignored all the complaints and serious issues that arose from the Bonython drone trial. It hasn't even conducted an evaluation of the trial for the public to see. A recent article in The Canberra Times reported that the ACT Government supports the expansion of Project Wing's drone operations in the ACT despite the fact that the majority of all those who have experienced the drones (including those in Royalla) strongly objected to them and don't want them anywhere near them, their children and their pets ever again!

The ACT Government has not endeared itself to its Bonython constituents for its lack of due diligence, governance and reasonable care and concern for them in the instigation and conduct of the Project Wing Bonython drone trial.

Thank you.

MARK E. BROWNE

20/2/19



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 150

Date Authorised for Publication: 13 March 2019

Submission for the Inquiry into drone delivery systems in the ACT

EXPERIENCES OF A BONYTHON DRONE TRIAL PARTICIPANT

I am writing as a first hand participant in the drone trial, and a Bonython resident. I have also previously contacted Gai Brodtmann on this matter.

This submission pertains predominately to my family and friends' experiences with delivery drones predominately in relation to the issues outlined in *Section D of the Terms of Reference*.

My submission will focus briefly on three key elements:

- 1) Perspective of a positive experience of a Bonython drone trial participant – impact on persons, environment and animals;
- 2) Concerns about the erroneous and hyperbolic nature of complaints by many (not all) of those against the trial; and
- 3) Questions about the potential politicised stifling of progress.

A first-hand experience

We were delighted to hear that the drone trial would be occurring in our suburb. It was brought to our attention through a flyer, promotion through the local primary school, and through the open day community event in Tuggeranong (which my Husband took our Son to). We had also previously known two families who had positive engagement with the trial in Royalla NSW. Having young children (aged 8 and 4) who were excited about the trial, we signed up as participants. From that point communication and service between Wing and our family was timely, personable and effective. We used the drone service 1-2 times per week. Many weeks we did not use it at all or if we did have chemist items we needed or visitors who wanted to see the drone, we would sometimes use it an extra time. Our use was less frequent when we heard about the concerns of others in our suburb. The service was not without minor mishap - such as the odd missed order, or concerns over drop points due to foliage - as they worked through bugs (this is in fact the point of a 'trial'), but solutions were always responsive and well thought out. We feel overall that our family and community benefited from the opportunity to participate in this innovative, world-first trial. Being part of the trial is something Canberra should showcase, regardless of the long-term outcomes. It shows that our nation's capital is open to new experiences and technologies, and can be a home ground for innovation. Participation and promotion does not necessarily assume final endorsement. My Husband and I have discussed that while our experience with drone delivery has been positive, given the early days of testing, we cannot yet decide if we are fully "for" drone delivery, until we know the nature, extent and governance of its long-term use. We have optimism and curiosity but not without a healthy level of reservation. As such, the following thoughts are based solely on our personal experience in the Bonython Wing Trial of 2018/2019.

Our main 'take-aways' and experiences can be summarised as follows:

- **Innovation:** The drones are an innovative and exciting technology (particularly for young people and children to 'be part of'). There was much enthusiasm from our children in learning about them and seeing them in action. Drones and other ubiquitous, mobile and aerial technologies will potentially be a significant part of their future and we are pleased to have been part of the advent for new uses in Canberra;
- **Usefulness:** There has been vocal conjecture about the benefits of the trial, and an implied frivolousness due to some of the available delivery options e.g. foods. We believe the use of burritos, coffee and chocolates were a good way to make the trial attractive and novel to test and pave the way for other product delivery in future. We found the drone delivery service to be handy in delivering items quickly and efficiently when it was otherwise not feasible or preferable for us to leave the house e.g. we ordered lunch one day when we were sweaty and dirt covered from landscaping the garden with our two children, and on a few occasions I was able to order much needed chemist products when myself and my children were unwell or without car. I would have otherwise been at pains to rush to a chemist. I anticipate personally, that the real benefits of technology and service like this will be in providing essential items to people who have mobility or access issues. I hope to see this element of its potential expanded.
- **Non-invasive:** My Husband and I were both legitimately surprised and disappointed to hear half-way through the trial that there was a group of Bonython residents (whom we did not know) who were vehemently against the trial. We did take their experiences into account and did in fact reduce our use of the service - reporting so to Wing. We did not want to be a noise burden or source of stress to anyone living closer to the launch point. That said, we did begin to question the motives and real experiences of some of the complainants - when the dialogue took on such a negative tone, often seeming contrived and exaggerated. We would like to note the following in terms of how invasive we found the drones to be:
 - *Noise:* They are indeed somewhat 'noisy' only as they land directly above you. This noise is fleeting and experienced mostly by the person/s receiving the delivery. This noise was inoffensive to us when nearby neighbours (some who received several deliveries a week) were receiving their deliveries. When inside our home, the sound of a drone passing by sounds about the same level as a mosquito next to your ear – even when it passed directly past our house. Often I wasn't sure if I heard one or not. The sound of my Husband ordering something while my Son napped, was not enough to wake him. Sounds which we find more offensive in our neighbourhood include: dogs incessantly barking; motorbikes that illegally ride upon the pathways past our house at night; loud music and partying from an inconsiderate neighbour most weekends in summer until midnight; wipper snippers and other garden machines (necessary and acceptable of course, but certainly more unpleasant as far as noise is concerned). Our small dog, who barks when other dogs set her off, thunder rumbles or if a stranger visits, did not seem concerned by the drones.;
 - *Privacy:* The drones flew at a height and speed in which we doubt there would be any concern for privacy when we were in our homes. It would have been near impossible for a drone to capture footage or visual of our family when we were in our house. Perhaps due to our location, drones never flew over our backyard so again, we were not concerned about the privacy for our children. We were informed that the camera only switches on for 'safety and guidance' upon drop. My greater concerns would be not in whether footage was taken, but how customer

data is stored, shared and protected and by whom. This however is a commercial data concern beyond the hardware of the drones, and a question for retailers in general – be they online, mobile, bricks and mortar etc. I would personally be more concerned about people utilising private/personal-use drones in a way that is deviant or anti-social, as they would remain unchecked.

- *Impact on nature:* We have heard it commented that the drones drove wildlife away from the suburb of Bonython. We have not experienced this but cannot speak for other parts of the suburb where this may be true. We are active gardeners and have an abundance of bees, lizards and birds in our yard. We also have domestic pets (a dog, cat and two rabbits). We are near to the Stranger Hills nature reserve which has no shortage of kangaroos. We love to walk up there and never heard a drone while on our usual trek around the hill towards Gordon. Cars are a greater threat to kangaroos, wombats and pets than drones. All-in-all I find it ironic that environment is being used as an argument *against* drones. They have a low carbon footprint and have the potential to reduce the number of vehicles on the road in a longer-term if used strategically. I did however see a local magpie swoop the drones a few times, and as such, there is a safety element and balance that needs to be considered – though these birds also swoop bicycle riders, children and dogs.
- *Safety:* I don't know about this. This is probably my biggest area of concern. What would happen if one of these drones drops down on top of someone? I have no further comment on this, except to say that I hope that precautions and mitigations are taken seriously.
- **Polarising:** Clearly based on the feedback and vocal opinions of some residents, the drones are not loved by all and there is some resistance and mistrust of their use. We respect our fellow neighbours and feel for anyone who was legitimately, measurably and negatively impacted by the trial - real or perceived threats to their emotional wellbeing. This is a concern for us as it did tend to “divide” our suburb. It did make us more mindful of our own thoughts on the drones, and impact on others. We will watch with interest to see what happens on the North of Canberra.

Feedback, complaints and representation

We first became aware of the position and complaints of other Bonython Residents, who had formed some kind of a citizens group against drones, when we made comments on a public social media post by Mick Gentleman. My Husband and two fellow neighbours had voiced some positive experiences with the trial and were consequently contested (in borderline attacking commentary) on social media. We decided to opt out of all public commentary after this for our family's wellbeing.

I also received a loud knock at the door one day as my Son napped. It was a Bonython man with a handheld “survey” asking me to essentially sign a petition against the drones under the guise of a statistical survey of local opinions. When I politely said I couldn't talk at that time as my Son had been woken, but that I was not against them, he looked aghast and left without obviously recording my response. I was later confused to see varying claims that between 80%-90% of residents were against the trial. Our thoughts on this are as follows:

- No genuine attempt was made to canvass the opinions and experiences of Bonython residents as a whole. Any complaint figures seem anecdotal and heavily loaded with agenda. The statistical representations of for and against are invalid. They are not an unbiased

representative sample. I would contest any suggestion that the methods used to arrive at this figure are valid. I find it somewhat insulting and inaccurate that these figures were used publicly by politicians and media.

- From our personal experience and perceptions of what was occurring through social media and in appeals made to local Members, was that a highly mobilised group - representing a minority of Bonython residents - vocally opposed the trial and relentlessly took down the opinions and ideas of anyone who contradicted them.
- The arguments against the trial ranged from valid and worthy of consideration and response, through to absurd conspiracy theories with no scientific or factual basis. We have read some claims in the media of people who believe the drones are spying in their windows, to those who claim that neighbours are receiving 30 or so deliveries a day. We would have been hard pressed to hear or see 30 drones *a week* – including those at a distance. The level of hysteria, aggression and fact-fudging was indicative of a broader agenda or possible mental ill health of some of the vocally negative residents (the latter not to be taken lightly and I have sympathy here). While I would never wish to minimise the experiences of someone legitimately aggrieved or hurt by such a trial (and in fact we did feel sad about their comments and chose to use the service less), I do question the validity of a large portion of the complaints. I would be curious to know how many were repeat complainers to Members and the trial company, rather than new complaints.

Progress and concerns

Overall I feel that drones are a sign-of the times, and the inevitable. They have many positive uses with environmental, safety and security, wellbeing and convenience benefits. They are not without their cons: some noise, concerns around privacy, and concerns around safety. For me however, the trial represented an opportunity to address some of these issues. My hope is that strict guidelines and laws that protect people, animals and places will be implemented to ensure that this technology is used in a purposeful way.

I am disappointed at the outcome of the trial in our area, and that it was not possible for the delivery to become permanent. We feel we would have liked to continue using it – perhaps not with the frequency as during the trial, but as needed. I feel the vocal politicising of an issue by a small and active group of Bonython residents, was somewhat ‘anti-progressive’. I would not be surprised if the fact that it had been approved by a local Labor Member had not been one of the reasons this was so aggressively and publicly shot down (given Bonython is the home turf of a local Liberal representative), and I would – on a hunch and with no real basis admittedly - question the motives of some of the particularly aggressive complaint makers.

One day my children, when they are grown, will look back and muse about being involved in a trial that was a first of its kind in the world. By then, this technology will be well established or replaced by something else. It seems futile to resist change and progress, particularly when we can instead participate, provide constructive (not aggressive and politically charged) feedback, and push for positive changes to ensure this technology and service is safe, effective and positive for everyone. This was an opportunity missed to gain a middle ground through constructive discussion. I think those who are against the drones for the ‘sake of being against something different’, will find themselves on the wrong-side of progress in the long-run. I would rather we now focus our attentions on ensuring that dialogue is open for improvements, so that these services can be implemented for purpose and convenience and not just for profit.

Conclusion:

I am not without reservation around the future drones, but would like to wrap-up by highlighting that this is why it is important to trial and discuss these new ventures. I do applaud the seriousness with which the experience of Canberrans is being taken into account. While some residents did not see the value of the trial that does not mean that the service was without value.

Our experiences with the trial were mostly positive, and we wish that the drone service was more broadly available in future and that it included additional products for delivery. We do however respect that not everyone has had a positive experience, and we hope that this will be considered in future iterations of the technology and service, so that they can strive to make delivery drones: quieter, safer, less invasive and more purposeful.

Contact:

I hope that my submission will be considered within the inquiry. I would prefer my personal details be kept confidential and I do not wish to participate face-to-face in any aspects of the inquiry. I do not wish to open myself or my family up to further discussion with 'anti-drone' protesters. My full name and address details can be obtained for your records upon request.

I am available for contact regarding this written submission via the following email:

[REDACTED]
[REDACTED]



LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
Mr Jeremy Hanson MLA (Chair), Ms Suzanne Orr MLA (Deputy Chair),
Mr Michael Pettersson MLA

Submission Cover Sheet

Inquiry into drone delivery systems in the ACT

Submission Number: 151

Date Authorised for Publication: 27 March 2019

From: Simon Byrne [REDACTED]
Sent: Monday, 25 March 2019 10:28 PM
To: LA Committee - EDT
Subject: Inquiry into drone delivery

Good afternoon

My name is Simon Byrne and I am a resident of Chapman ACT. I would like to provide a submission to the Standing Committee on Economic development and Tourism's inquiry into drone delivery systems in the ACT.

The use of unmanned aircraft, or drones, has been somewhat limited to military purpose until relatively recently, with the commercial sector now looking to capitalise on this emerging sector of the aviation industry. The main argument for introducing drone technology an economic one. While there is may be good economic reasons for introducing drone technology, limited research has been carried out on the public perception and acceptance of drone technology and the impacts it may have on the community. Of the limited studies that have been carried out on drones, the majority have focused on safety, security and privacy risks. Fewer still have looked into the potential psychological impacts and whether drones may have a negative impact on our health and wellbeing. And these are not trivial issues. While economic arguments are important, they are no less or more important than social, ethical, environmental or psychological arguments. Ultimately, it's up to us as individuals, a community and as a culture to determine whether we want to accept or reject the use of drone technology in our communities. We must carefully consider all issues and arguments and not just rely on information provided by the drone companies. We must source information from independent unbiased reputable sources to ensure any decision is informed by reliable information.

I think it's important to point out that as humans we have a remarkable ability to invent new technologies. However, we also have a long and chequered history of failing to fully comprehend or even appreciate the consequences of introducing new technologies. Sometimes to disastrous effect. In a time where technological innovation is advancing exponentially, it is imperative that we carefully consider our actions before we rush into a decision that could have substantial consequences. There is no need to rush or create fake urgency. We need to consider all the issues and ensure the community has sufficient time to digest and understand the risks before any decision is taken. Just because we have access to the technology does not mean it should be deployed. We, as a community, get to make this decision, and if we decide it should be rejected, then it should be rejected.

As the company has been lobbying government to introduce drones into our community, and undoubtedly has been espousing the limitless benefits of deploying drone technology, it is my imperative as a citizen of Canberra to put forward my concerns and ensure the Committee takes a careful look at possible risks posed by drones and to think about the potential consequences. Like many residents, I have serious concerns about introducing drones. It is emerging sector and there are likely to be unintended consequences that have not been explored. As such, my reasons for rejecting drone deployment in Canberra include:

Lack of community awareness

There is a lack of awareness and knowledge about drone technology in the community. People are unaware of the risks posed by drones. They are likely to be unaware of the safety, security and privacy risks of drones. People are also unlikely to be aware of the potential psychological impacts of drone use, including but not limited, to noise and visual pollution and fears associated with personal safety, privacy and security. These risks are real. We should not move ahead with the use of drones until the community is properly informed of the risks.

Lack of regulation

The only regulation governing drone use in Australia relates to the commercial use of drones in public air space (administered by CASA). And these regulations do not appear adequate, particularly in addressing safety in suburban airspace.

There is currently no regulation restricting the use of drones to ensure personal privacy is protected. Clearly there is a need to address privacy concerns the community has before drones can be deployed. While it may be difficult to

regulate drone use in public areas on privacy grounds, there is still an argument for ensuring drones do not impinge on personal privacy and where there is an expectation of privacy (in backyards and inside the home).

Safety concerns

There are substantial safety risks associated with using drones to deliver goods by air. Currently, regulations are not adequate to address safety risks associated with mass drone deployment into the community. The following risks are real and could lead to serious injury or death include:

- Drone malfunction during flight
- Unexpected and unforeseen weather events (e.g. wind gust on delivery)
- Collisions with other drones (commercial or private) and aircraft
- Obstacles that interfere or hinder drone delivery
- Unforeseen events such as bird strike
- Inadequate clearance area around drones
- Person fails to notice drone delivery and gets injured.
- Deliveries to densely populated areas increase risk of drone hazards.

If drones pose an increased safety risk to the community then the use of drones should not be considered. Large drones used for the delivery of larger goods pose a significant threat to the safety to the community. Numerous studies have shown that if a large drone malfunctions or is brought down by some other means (e.g. bird strike) it could seriously injure or kill someone. And this risk only increases as the use of drones increases.

Privacy concerns

Current privacy laws are inadequate to deal with privacy issues concerning drone flights and deliveries. There is already fear and anxiety in the community around the use of surveillance and this fear will only increase through the use of drones. The sense that “bigger brother is watching”. And this privacy concern is well founded because drones do indeed collect data and information on individuals as they deliver their goods. They capture this information through onboard cameras (cameras are needed on drones for navigation and for insurance purposes). But who owns this data? The individual or the company or the government? Can this data be purchased and used for other purposes? Are there situations where this data and information could breach privacy laws? People have a right to privacy and drones could breach these laws. If the privacy of individual citizens cannot be guaranteed then we should not consider using drones as a delivery service.

Security concerns

If drones can be used to deliver goods they can also be used and manipulated to facilitate crime and terrorism. Drones, like any other technology, can be hacked or manipulated. Therefore, there is a risk that if drones get into the wrong hands they could be used as an eye in the sky to facilitate crime or be directly employed for terrorism. This is a real and possible danger. ASIO and other counter terrorism agencies will be taking a keen interest in this trial and the use of drones given their potential for causing significant harm should they fall into the wrong hands. Turning these unmanned vehicles into weapons becomes a looming threat that requires significant analysis before deployment can be considered. While we don't want to unnecessarily alarm people, the reality is that deploying drones increases these risks.

Public nuisance

There is growing evidence that drones are having a negative impact on our communities and are likely to become a public nuisance. Bonython residents have successfully rejected the trial in their suburb, citing safety, privacy and noise concerns as the main reasons for rejecting the trial. Other communities are also voicing similar concerns. If communities are rejecting the use of drones then clearly, they should not be deployed. Ultimately, if flying drones are adversely affecting individuals and the community then the companies who wish to use should have no right to fly them. It's that simple.

Psychological distress

There has been almost no scientific research conducted into the potential psychological impacts of commercial drone use in Australia or overseas. There is however, substantial scientific evidence on the negative psychological impacts of drone when deployed for military purposes during wars. Psychological conditions identified in the literature range from mild anxiety and depression to chronic PTSD, trauma, headaches, nausea, physical symptoms and chronic anxiety and depression. These conditions were not just felt by the drone operators but also by the

Sevillian population, with the ever-present threat of drone attack. While drones in this trial do not represent this level of threat, it does highlight the potential psychological issues that could arise through drone use – worry about safety, privacy and security. Other psychological issues that arise from drone use include worry over noise and visual pollution (constantly being watched). It is imperative that we thoroughly investigate the psychological impacts of drone use before any decision is made to deploy them into our communities.

Environmental impacts

The impact on wildlife and our pets is likely to be significant. Native birds in particular are susceptible to being killed or injured by drones. There is also the potential for dogs and other pets being impacted. There are not just physical threats, noise and visual issues are likely to have a negative impact on wildlife. Drone use must avoid sensitive wildlife populations and habitats.

There is also the argument that drone technology will substantially reduce carbon emissions associated with delivery services. This must be independently verified by unbiased third-party scientific research as a starting point – not research funded by the drone companies. While there appears to be some advantages in using drones to reduce carbon emissions, this advantage is only significant where small parcels are being delivered by small drones over short distances. Large drones carrying goods 8kg and over have no emissions savings compared to regular car-based delivery. The advantage is lost because of the energy demands of the drones, the need for multiple trips (drones carry one package at a time) and the large fleet of drones needed. With renewable energy becoming a larger mix of energy production and car manufacturers moving to electric vehicles in the next year or so the emissions argument for using drones is less clear. And in populated areas, human-powered deliver services are a better option as it generates no greenhouse gas emissions at all.

Ultimately, do we really want noisy, visually intrusive manmade aircraft polluting our skies at a time when we are being bombarded by technology? We know how damaging technology can be on our mental health and wellbeing, so do we really want yet another intrusive technology competing for our attention? Do we want our views being constantly interrupted by noisy drones every time we look out the window? Do we want our enjoyment of the outdoors being constantly spoilt by noisy drones flying past? There would be no escape. Drones will become ubiquitous. They would cover the urban sky. This is not a future I want. And I'm sure most of us wouldn't want this future either. Because this trial is only the beginning. If we let this trial succeed it will only open the floodgates and allow substantial use of drones in our communities. This is what has happened in the past with other technologies so why would it be any different for drones.

I hope the Committee will consider my concerns as part of its inquiry into the use of drones in Canberra.

Kind regards
Simon Byrne

